

CERTIFICATE OF ANALYSIS

Work Order : **EM1715998**
Client : **GHD PTY LTD**
Contact : **MR REID MERRIMAN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **+61 03 8687 8000**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **SH**
Site : **----**
Quote number : **EN/005/15 VICTORIA (Primary work only)**
No. of samples received : **6**
No. of samples analysed : **6**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 22-Nov-2017 12:35
Date Analysis Commenced : 23-Nov-2017
Issue Date : 29-Nov-2017 13:51



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH089_0.2m	NEL-BH089_0.6m	NEL-BH088_0.2m	NEL-BH088_0.6m	NEL-BH087_0.2m
Client sampling date / time					21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		EM1715998-001	EM1715998-002	EM1715998-003	EM1715998-004	EM1715998-005
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.4	6.8	4.4	5.7	4.8
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		17.0	12.3	5.6	11.7	15.4
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Sample weight (dry)	----	0.01	g		30.3	28.4	17.3	20.9	20.7
APPROVED IDENTIFIER:	----	-	--		E.DAOS	E.DAOS	E.DAOS	E.DAOS	E.DAOS
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		7	9	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		17	30	<5	12	<5
Lead	7439-92-1	5	mg/kg		24	23	6	12	8
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		9	10	2	16	3
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		21	10	<5	16	6
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		480	520	160	620	130
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2



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Compound	CAS Number	LOR	Unit		EM1715998-001	EM1715998-002	EM1715998-003	EM1715998-004	EM1715998-005
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH089_0.2m	NEL-BH089_0.6m	NEL-BH088_0.2m	NEL-BH088_0.6m	NEL-BH087_0.2m
Client sampling date / time					21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		EM1715998-001	EM1715998-002	EM1715998-003	EM1715998-004	EM1715998-005
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg		<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH089_0.2m	NEL-BH089_0.6m	NEL-BH088_0.2m	NEL-BH088_0.6m	NEL-BH087_0.2m
Client sampling date / time				21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00
Compound	CAS Number	LOR	Unit	EM1715998-001	EM1715998-002	EM1715998-003	EM1715998-004	EM1715998-005
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

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Client sampling date / time					21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00	21-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		EM1715998-001	EM1715998-002	EM1715998-003	EM1715998-004	EM1715998-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		94.1	94.0	89.1	91.6	91.1
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		79.6	89.1	88.0	84.5	82.4
Toluene-D8	2037-26-5	0.1	%		77.1	89.1	84.6	79.7	79.8
4-Bromofluorobenzene	460-00-4	0.1	%		82.8	88.3	84.8	84.6	79.9
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		96.0	91.9	82.9	85.4	86.4
2-Chlorophenol-D4	93951-73-6	0.025	%		88.7	85.8	75.5	78.2	78.8
2,4,6-Tribromophenol	118-79-6	0.025	%		100	89.0	89.8	86.6	92.3
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		105	98.4	86.6	85.9	89.7
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		90.0	87.0	76.2	83.0	80.1
2-Fluorobiphenyl	321-60-8	0.025	%		101	92.8	89.0	92.3	90.9
Anthracene-d10	1719-06-8	0.025	%		106	96.2	94.0	94.9	95.0
4-Terphenyl-d14	1718-51-0	0.025	%		121	112	111	108	109



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-BH087_0.7m	----	----	----	----
Client sampling date / time				21-Nov-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1715998-006	-----	-----	-----	-----
Result				----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	6.2	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	10.8	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos (Trace)	1332-21-4	5	Fibres	No	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos Type	1332-21-4	-	--	-	----	----	----	----
Sample weight (dry)	----	0.01	g	21.7	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	E.DAOS	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	8	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	6	----	----	----	----
Lead	7439-92-1	5	mg/kg	15	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	8	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	6	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	330	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH087_0.7m	----	----	----	----
Client sampling date / time				21-Nov-2017 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1715998-006	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH087_0.7m	----	----	----	----
Client sampling date / time				21-Nov-2017 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1715998-006	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	----	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	----	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	----	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	----	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	----	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	----	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	----	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	----	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH087_0.7m	----	----	----	----
Client sampling date / time				21-Nov-2017 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1715998-006	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	----	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	----	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH087_0.7m	----	----	----	----
Client sampling date / time				21-Nov-2017 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1715998-006	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	97.1	----	----	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	94.0	----	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	93.2	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	95.3	----	----	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%	90.3	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%	82.8	----	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%	87.3	----	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%	93.2	----	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	83.4	----	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%	92.6	----	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%	98.4	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%	113	----	----	----	----	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	NEL-BH089_0.2m - 21-Nov-2017 00:00	Brown orange clay like soil.
EA200: Description	NEL-BH089_0.6m - 21-Nov-2017 00:00	Tan orange clay like soil.
EA200: Description	NEL-BH088_0.2m - 21-Nov-2017 00:00	Brown soil.
EA200: Description	NEL-BH088_0.6m - 21-Nov-2017 00:00	Brown orange clay like soil.
EA200: Description	NEL-BH087_0.2m - 21-Nov-2017 00:00	Brown orange clay like soil.
EA200: Description	NEL-BH087_0.7m - 21-Nov-2017 00:00	Brown orange clay like soil.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

GHD





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[illegible]

Sampled by: SCOTT HILLIARD (SH)	Date/Time 21/11/17 AM	Relinquished by: SCOTT HILLIARD	Date/Time 22/11/17 AM
Received by: REBECCA MACKLIN	Date/Time 22-11-17 AM	Relinquished by: Rachael Byrne	Date/Time 22/11/17 10:57am
Received by Courier: 	Date/Time 22/11/17 10:57 AM	Relinquished by:	Date/Time
Received by Lab:  (Am)	Date/Time 22/11/17 1235		
Remarks: DAVID QUINN - 8687 8627 - DAVID@QUINN@GHD.COM			

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Wednesday, 22 November 2017 1:09 PM
To: Shirley LeCornu
Subject: RE: EM1715998 - GHD - 31350060803

Hi Shirley,

All samples to be analysed for VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Many thanks,

David Quinn

Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

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From: Shirley LeCornu [<mailto:shirley.lecornu@alsglobal.com>]
Sent: Wednesday, 22 November 2017 1:02 PM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1715998 - GHD - 31350060803

Hi David

When you get a chance can you please let me know the analysis required for the attached COC.

Thanks

Shirley

Shirley LeCornu

Client Services Officer – Springvale
Environmental



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**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1715998**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR REID MERRIMAN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: reid.merriman@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: +61 03 8687 8000	Telephone	: +61-3-8549 9630
Facsimile	: +61 03 8687 8111	Facsimile	: +61-3-8549 9601
Project	: 31350060803	Page	: 1 of 2
Order number	: ----	Quote number	: EB2017GHDSE0022 (EN/005/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: SH		

Dates

Date Samples Received	: 22-Nov-2017 12:35	Issue Date	: 23-Nov-2017
Client Requested Due Date	: 29-Nov-2017	Scheduled Reporting Date	: 29-Nov-2017

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 13.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 6 / 6

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- ### Summary of Sample(s) and Requested Analysis

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOL - E Moisture	SOL - E Asbestos	SOL - P WRG 6
EM1715998-001	21-Nov-2017 00:00	NEL-BH089_0.2m	✓	✓	✓
EM1715998-002	21-Nov-2017 00:00	NEL-BH089_0.6m	✓	✓	✓
EM1715998-003	21-Nov-2017 00:00	NEL-BH088_0.2m	✓	✓	✓
EM1715998-004	21-Nov-2017 00:00	NEL-BH088_0.6m	✓	✓	✓
EM1715998-005	21-Nov-2017 00:00	NEL-BH087_0.2m	✓	✓	✓
EM1715998-006	21-Nov-2017 00:00	NEL-BH087_0.7m	✓	✓	✓

Sample(s) have been received within the recommended holding times for the requested analysis.

Email ap-fss@ghd.com

Email david.quinn@ghd.com

- [illegible]

Email reid.merriman@ghd.com

- [illegible]

QUALITY CONTROL REPORT

Work Order	: EM1715998	Page	: 1 of 12
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR REID MERRIMAN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: +61 03 8687 8000	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 22-Nov-2017
Order number	: ----	Date Analysis Commenced	: 23-Nov-2017
C-O-C number	: ----	Issue Date	: 29-Nov-2017
Sampler	: SH		
Site	: ----		
Quote number	: EN/005/15 VICTORIA (Primary work only)		
No. of samples received	: 6		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1271133)									
EM1715959-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.3	7.2	1.38	0% - 20%
EM1716065-017	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.8	7.7	1.29	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1266878)									
EM1715998-001	NEL-BH089_0.2m	EA055: Moisture Content	----	1	%	17.0	14.4	16.6	0% - 50%
EM1716062-019	Anonymous	EA055: Moisture Content	----	1	%	11.8	10.2	15.3	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1264802)									
EB1724509-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	8	23.5	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	12	37.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	20	26	27.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	113	135	17.6	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	5	8	39.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	157	192	19.6	0% - 20%
EM1715972-035	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	50	46	7.66	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	8	7	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	35	29	20.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	27	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	9	24.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1264802) - continued									
EM1715972-035	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	18	19	0.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1264803)									
EM1715998-003	NEL-BH088_0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	2	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	8	26.3	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EM1716062-021	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	7	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	6	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	28	28	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1264801)									
EB1724509-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1715972-035	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1264804)									
EM1715998-003	NEL-BH088_0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1716062-021	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1267236)									
EM1715998-001	NEL-BH089_0.2m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1716062-010	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1268391)									
EM1716062-010	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1716062-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1263804)									
EM1715867-026	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	70	80	0.00	No Limit
EM1715998-006	NEL-BH087_0.7m	EK040T: Fluoride	16984-48-8	40	mg/kg	330	240	32.4	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1266944)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1266944) - continued									
EM1715998-001	NEL-BH089_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1263807)									
EM1715998-001	NEL-BH089_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1263807)									
EM1715998-001	NEL-BH089_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1263807)									
EM1715998-001	NEL-BH089_0.2m	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1266942)							
EM1715998-001	NEL-BH089_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1266942) - continued									
EM1715998-001	NEL-BH089_0.2m	EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1266942)									
EM1715998-001	NEL-BH089_0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1266942)									
EM1715998-001	NEL-BH089_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1266942)									
EM1715998-001	NEL-BH089_0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

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 Work Order : EM1715998
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1266942) - continued									
EM1715998-001	NEL-BH089_0.2m	EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1263807)									
EM1715998-001	NEL-BH089_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1266943)									
EM1715998-001	NEL-BH089_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1263807)									
EM1715998-001	NEL-BH089_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1266943)									
EM1715998-001	NEL-BH089_0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1264802)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	96.4	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	85.6	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	90.6	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	88.7	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	91.0	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	93.2	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.1	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.5	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	93.6	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	95.4	82	111
EG005T: Total Metals by ICP-AES (QCLot: 1264803)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.0	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	105	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	91.0	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	88.7	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	92.3	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	97.0	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.6	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	105	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	95.6	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1264801)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.9	77	104
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1264804)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	91.1	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1267236)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	88.6	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1268391)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	95.1	80	110
EK040T: Fluoride Total (QCLot: 1263804)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	83.8	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1266944)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	99.3	63	133



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1263807)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	93.1	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	94.8	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	92.6	69	117
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	89.1	68	116
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	98.0	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	92.2	70	116
EP074H: Naphthalene (QCLot: 1263807)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	101	74	116
EP074I: Volatile Halogenated Compounds (QCLot: 1263807)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	99.2	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	88.1	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	95.2	65	131
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	89.3	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	93.4	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	91.8	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	86.0	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	83.9	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	100	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	91.6	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	99.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	92.8	58	120
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	88.0	70	119
EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	94.8	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	81.2	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.4	70	122
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.3	61	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	67	117
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	85.1	53	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1266942)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	104	43	119
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	97.2	44	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	108	43	122
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	97.0	50	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	104	44	128
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	92.9	44	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	110	46	126



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1266942) - continued								
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	106	44	124
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	87.5	36	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1266942)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	91.6	41	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	107	41	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	99.3	43	130
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	94.7	49	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	104	37	119
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	44.2	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	88.9	49	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	47.6	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	72.9	48	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	68.7	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1266942)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	106	44	122
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	110	54	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	107	46	126
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	112	51	125
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	114	57	127
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	71.1	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	112	57	131
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	115	57	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	112	56	132
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	114	58	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	117	55	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	110	51	135
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	113	55	137
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	112	54	136
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	114	55	137
EP075I: Organochlorine Pesticides (QCLot: 1266942)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	112	54	130
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	106	54	130
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	112	54	134
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	112	54	132
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	115	55	131
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	110	54	128



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075I: Organochlorine Pesticides (QCLot: 1266942) - continued								
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	112	54	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	110	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	112	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	111	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	96.6	53	133
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	112	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	115	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	108	28	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	131	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	116	56	138
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	118	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	116	51	133
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	106	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	109	48	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1263807)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	98.5	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1266943)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	115	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	119	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	118	75	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1263807)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	98.7	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1266943)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	116	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	118	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	116	43	123

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1264802)							
EB1724509-002	Anonymous	EG005T: Zinc	7440-66-6	50 mg/kg	104	74	128

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1264802) - continued							
EB1724509-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	100.0	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	104	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	120	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	86.2	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	88.2	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	92.0	71	125
EG005T: Total Metals by ICP-AES (QCLot: 1264803)							
EM1715998-004	NEL-BH088_0.6m	EG005T: Arsenic	7440-38-2	50 mg/kg	92.8	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	87.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	90.1	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	100	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	97.0	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	81.0	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	79.6	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	84.0	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1264801)							
EB1724509-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	91.8	76	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1264804)							
EM1715998-004	NEL-BH088_0.6m	EG035T: Mercury	7439-97-6	5 mg/kg	89.4	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1267236)							
EM1715998-002	NEL-BH089_0.6m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	75.0	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1268391)							
EM1715998-002	NEL-BH089_0.6m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	102	77	113
EK040T: Fluoride Total (QCLot: 1263804)							
EM1715874-011	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	108	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1266944)							
EM1715998-002	NEL-BH089_0.6m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	100	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1263807)							
EM1715998-002	NEL-BH089_0.6m	EP074-UT: Benzene	71-43-2	2 mg/kg	84.3	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	83.0	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1263807)							
EM1715998-002	NEL-BH089_0.6m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	92.3	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	81.6	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	89.6	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1266942)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1266942) - continued							
EM1715998-002	NEL-BH089_0.6m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	94.5	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	87.6	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	53.6	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1266942)							
EM1715998-002	NEL-BH089_0.6m	EP075-EM: Phenol	108-95-2	1 mg/kg	82.4	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	80.9	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1266942)							
EM1715998-002	NEL-BH089_0.6m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	99.4	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	104	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1263807)							
EM1715998-002	NEL-BH089_0.6m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	72.5	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1266943)							
EM1715998-004	NEL-BH088_0.6m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	108	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	111	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	110	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1263807)							
EM1715998-002	NEL-BH089_0.6m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	69.7	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1266943)							
EM1715998-004	NEL-BH088_0.6m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	109	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	110	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	107	44	126

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1715998**

Page : 1 of 8

Client : **GHD PTY LTD**
Contact : **MR REID MERRIMAN**
Project : **31350060803**
Site : **----**
Sampler : **SH**
Order number : **----**

Laboratory : **Environmental Division Melbourne**
Telephone : **+61-3-8549 9630**
Date Samples Received : **22-Nov-2017**
Issue Date : **29-Nov-2017**
No. of samples received : **6**
No. of samples analysed : **6**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Control Samples (LCS)					
Hexavalent Chromium by Alkaline Digestion and DA Finish	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH089_0.2m, NEL-BH088_0.2m, NEL-BH087_0.2m,	NEL-BH089_0.6m, NEL-BH088_0.6m, NEL-BH087_0.7m	21-Nov-2017	27-Nov-2017	28-Nov-2017	✔	27-Nov-2017	27-Nov-2017	✔
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH089_0.2m, NEL-BH088_0.2m, NEL-BH087_0.2m,	NEL-BH089_0.6m, NEL-BH088_0.6m, NEL-BH087_0.7m	21-Nov-2017	----	----	----	24-Nov-2017	05-Dec-2017	✔
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag: Separate bag received (EA200) NEL-BH089_0.2m, NEL-BH088_0.2m, NEL-BH087_0.2m,	NEL-BH089_0.6m, NEL-BH088_0.6m, NEL-BH087_0.7m	21-Nov-2017	----	----	----	23-Nov-2017	20-May-2018	✔
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag: Separate bag received (EA200) NEL-BH089_0.2m, NEL-BH088_0.2m, NEL-BH087_0.2m,	NEL-BH089_0.6m, NEL-BH088_0.6m, NEL-BH087_0.7m	21-Nov-2017	----	----	----	23-Nov-2017	20-May-2018	✔
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH089_0.2m, NEL-BH088_0.2m, NEL-BH087_0.2m,	NEL-BH089_0.6m, NEL-BH088_0.6m, NEL-BH087_0.7m	21-Nov-2017	24-Nov-2017	20-May-2018	✔	24-Nov-2017	20-May-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)		21-Nov-2017	24-Nov-2017	19-Dec-2017	✓	24-Nov-2017	19-Dec-2017	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)		21-Nov-2017	24-Nov-2017	19-Dec-2017	✓	24-Nov-2017	01-Dec-2017	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)		21-Nov-2017	24-Nov-2017	05-Dec-2017	✓	27-Nov-2017	08-Dec-2017	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)		21-Nov-2017	23-Nov-2017	19-Dec-2017	✓	24-Nov-2017	19-Dec-2017	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)		21-Nov-2017	24-Nov-2017	05-Dec-2017	✓	24-Nov-2017	03-Jan-2018	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)		21-Nov-2017	23-Nov-2017	28-Nov-2017	✓	24-Nov-2017	28-Nov-2017	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)		21-Nov-2017	23-Nov-2017	28-Nov-2017	✓	24-Nov-2017	28-Nov-2017	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)		21-Nov-2017	23-Nov-2017	28-Nov-2017	✓	24-Nov-2017	28-Nov-2017	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)		21-Nov-2017	24-Nov-2017	05-Dec-2017	✓	24-Nov-2017	03-Jan-2018	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)		21-Nov-2017	24-Nov-2017	05-Dec-2017	✓	24-Nov-2017	03-Jan-2018	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)		21-Nov-2017	24-Nov-2017	05-Dec-2017	✓	24-Nov-2017	03-Jan-2018	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)		21-Nov-2017	24-Nov-2017	05-Dec-2017	✓	24-Nov-2017	03-Jan-2018	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)		21-Nov-2017	23-Nov-2017	28-Nov-2017	✓	24-Nov-2017	28-Nov-2017	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
Soil Glass Jar - Unpreserved (EP071-EM)		21-Nov-2017	24-Nov-2017	05-Dec-2017	✓	24-Nov-2017	03-Jan-2018	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)		21-Nov-2017	23-Nov-2017	28-Nov-2017	✓	24-Nov-2017	28-Nov-2017	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							
Soil Glass Jar - Unpreserved (EP071-EM)		21-Nov-2017	24-Nov-2017	05-Dec-2017	✓	24-Nov-2017	03-Jan-2018	✓
NEL-BH089_0.2m,	NEL-BH089_0.6m,							
NEL-BH088_0.2m,	NEL-BH088_0.6m,							
NEL-BH087_0.2m,	NEL-BH087_0.7m							



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Page : 6 of 8
 Work Order : EM1715998
 Client : GHD PTY LTD
 Project : 31350060803



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	39	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CERTIFICATE OF ANALYSIS

Work Order : **EM1716457**
Client : **GHD PTY LTD**
Contact : **DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **SCOTT HILLIARD**
Site : **North East Link**
Quote number : **EN/005/17**
No. of samples received : **1**
No. of samples analysed : **1**

Page : **1 of 9**
Laboratory : **Environmental Division Melbourne**
Contact : **Shirley LeCornu**
Address : **4 Westall Rd Springvale VIC Australia 3171**
Telephone : **+61-3-8549 9630**
Date Samples Received : **30-Nov-2017 12:15**
Date Analysis Commenced : **30-Nov-2017**
Issue Date : **06-Dec-2017 11:14**



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-BH086_0.3m	----	----	----	----
Client sampling date / time				02-Nov-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1716457-001	-----	-----	-----	-----
Result				----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	4.4	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	17.2	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos (Trace)	1332-21-4	5	Fibres	No	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos Type	1332-21-4	-	--	-	----	----	----	----
Sample weight (dry)	----	0.01	g	20.4	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	E.DAOS	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	9	----	----	----	----
Lead	7439-92-1	5	mg/kg	10	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	16	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	12	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	2	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	530	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH086_0.3m	----	----	----	----
Client sampling date / time					02-Nov-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1716457-001	-----	-----	-----	-----
				Result	----	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH086_0.3m	----	----	----	----
Client sampling date / time					02-Nov-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1716457-001	-----	-----	-----	-----
				Result	----	----	----	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg		<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH086_0.3m	----	----	----	----
Client sampling date / time				02-Nov-2017 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1716457-001	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	----	----	----	----
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	----	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	----	----	----	----
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	----	----	----	----
4.4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	----	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH086_0.3m	----	----	----	----
Client sampling date / time					02-Nov-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1716457-001	-----	-----	-----	-----
				Result		----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		103	----	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		84.9	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		73.7	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		84.5	----	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		116	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		97.1	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		119	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		113	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		119	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		121	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%		121	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		138	----	----	----	----

Page : 8 of 9
Work Order : EM1716457
Client : GHD PTY LTD
Project : 31350060803



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	NEL-BH086_0.3m - 02-Nov-2017 00:00	Mid brown clay like soil with organic matter.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 30 November 2017 5:31 PM
To: Shirley LeCornu
Subject: RE: EM1716443 - GHD - 31350060803

Hi Shirley,

As per last time, to be analysed for VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Thanks,

David Quinn

Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the *Inside Waste Consultants Review*

Please consider our environment before printing this email

From: Shirley LeCornu [<mailto:shirley.lecornu@alsglobal.com>]
Sent: Thursday, 30 November 2017 5:12 PM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1716443 - GHD - 31350060803

Hi David

Please let me know analysis required for the attached, when you get a chance.

Thanks

Shirley

Shirley LeCornu

Client Services Officer – Springvale
Environmental



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Shirley.lecornu@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

QUALITY CONTROL REPORT

Work Order	: EM1716457	Page	: 1 of 10
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 30-Nov-2017
Order number	: ----	Date Analysis Commenced	: 30-Nov-2017
C-O-C number	: ----	Issue Date	: 06-Dec-2017
Sampler	: SCOTT HILLIARD		
Site	: North East Link		
Quote number	: EN/005/17		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1284084)									
EM1716457-001	NEL-BH086_0.3m	EA001: pH (CaCl2)	----	0.1	pH Unit	4.4	4.5	2.25	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1284063)									
EM1716415-021	Anonymous	EA055: Moisture Content	----	1	%	18.1	17.3	4.44	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1283090)									
EM1716457-001	NEL-BH086_0.3m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	17	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	9	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	11	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	12	12	0.00	No Limit		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1283089)									
EM1716457-001	NEL-BH086_0.3m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1283094)									
EM1716457-001	NEL-BH086_0.3m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1285581)									
EM1716433-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1283093)									
EM1716457-001	NEL-BH086_0.3m	EK040T: Fluoride	16984-48-8	40	mg/kg	530	550	3.69	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1284083)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1284083) - continued									
EM1716103-019	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.2	<0.2	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1284012)									
EM1716376-011	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1284012)									
EM1716376-011	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1284012)									
EM1716376-011	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1284081)							
EM1716103-019	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.07	<0.07	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1284081) - continued									
EM1716103-019	Anonymous	EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.14	<0.14	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1284081)									
EM1716103-019	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<6	<6	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1284081)									
EM1716103-019	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1284081)									
EM1716103-019	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.07	<0.07	0.00	No Limit

Page : 5 of 10
 Work Order : EM1716457
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1284081) - continued									
EM1716103-019	Anonymous	EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1284012)									
EM1716376-011	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1284082)									
EM1716103-019	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	12200	12200	0.300	0% - 20%
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	840	840	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	90	90	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1284012)									
EM1716376-011	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1284082)									
EM1716103-019	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	12200	12200	0.288	0% - 20%
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	110	110	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	720	720	0.00	0% - 50%



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1283090)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	90.4	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	87.2	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	98.2	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	89.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	92.8	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	102	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	95.8	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.3	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1283089)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	86.2	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1283094)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	84.6	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1285581)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	99.9	80	110
EK040T: Fluoride Total (QCLot: 1283093)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	95.6	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1284083)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	81.9	63	133
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1284012)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	90.1	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	92.0	70	118
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	90.9	69	117
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	86.6	68	116
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	91.8	71	117
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	89.1	70	116
EP074H: Naphthalene (QCLot: 1284012)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	84.5	74	116
EP074I: Volatile Halogenated Compounds (QCLot: 1284012)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	68.4	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	88.2	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1284012) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	99.1	65	131
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	88.6	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	92.5	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	91.8	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	86.2	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	81.0	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	108	70	122
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	86.7	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	101	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	90.0	58	120
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	96.4	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	104	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	74.7	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	93.9	70	122
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	89.3	61	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	96.2	67	117
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	89.4	53	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1284081)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	94.7	43	119
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	82.6	44	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	95.7	43	122
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	86.5	50	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	97.0	44	128
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	87.3	44	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	119	46	126
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	98.7	44	124
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	103	36	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1284081)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	86.4	41	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	95.7	41	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	87.4	43	130
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	82.0	49	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	96.4	37	119
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	79.0	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	87.0	49	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	63.7	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	79.9	48	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	75.2	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1284081)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	98.6	44	122
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	103	54	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	97.9	46	126
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	104	51	125
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	105	57	127
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	65.0	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	105	57	131
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	108	57	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	107	56	132
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	109	58	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	105	55	133
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	99.5	51	135
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	100	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	100	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	103	55	137
EP075I: Organochlorine Pesticides (QCLot: 1284081)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	107	54	130
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	99.4	54	130
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	82.1	54	134
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	109	54	132
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	106	55	131
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	95.6	54	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	106	54	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	107	56	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	105	56	130
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	106	55	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	108	53	133
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	108	54	130
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	110	57	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	80.0	28	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	100	40	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	113	56	138
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	123	57	135
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	106	51	133
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	85.8	51	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	86.2	48	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1284012)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	85.9	69	114



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1284082)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	88.9	72	130
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	99.7	77	126
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	99.8	75	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1284012)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	86.4	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1284082)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	94.7	75	123
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	99.7	77	127
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	85.6	43	123

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1285581)							
EM1716457-001	NEL-BH086_0.3m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	104	77	113
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1284083)							
EM1716457-001	NEL-BH086_0.3m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	69.5	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1284012)							
EM1716415-003	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	106	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	102	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1284012)							
EM1716415-003	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	118	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	104	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	113	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1284081)							
EM1716415-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	116	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	98.5	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	43.4	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1284081)							
EM1716415-003	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	114	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	94.7	13	129

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 Work Order : EM1716457
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1284081)							
EM1716415-003	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	122	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	145	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1284012)							
EM1716415-003	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	81.2	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1284082)							
EM1716415-004	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	102	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	112	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	112	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1284012)							
EM1716415-003	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	79.7	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1284082)							
EM1716415-004	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	107	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	112	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	99.7	44	126

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1716457	Page	: 1 of 9
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 30-Nov-2017
Site	: North East Link	Issue Date	: 06-Dec-2017
Sampler	: SCOTT HILLIARD	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

Sub-Matrix: **SOIL**

Outliers : Analysis Holding Time Compliance

[illegible]



Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP075A: Phenolic Compounds (Non-halogenated) - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved NEL-BH086_0.3m	01-Dec-2017	16-Nov-2017	15	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons						
Soil Glass Jar - Unpreserved NEL-BH086_0.3m	01-Dec-2017	16-Nov-2017	15	----	----	----
EP075I: Organochlorine Pesticides						
Soil Glass Jar - Unpreserved NEL-BH086_0.3m	01-Dec-2017	16-Nov-2017	15	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved NEL-BH086_0.3m	01-Dec-2017	16-Nov-2017	15	----	----	----
Soil Glass Jar - Unpreserved NEL-BH086_0.3m	30-Nov-2017	09-Nov-2017	21	01-Dec-2017	09-Nov-2017	22
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Soil Glass Jar - Unpreserved NEL-BH086_0.3m	01-Dec-2017	16-Nov-2017	15	----	----	----
Soil Glass Jar - Unpreserved NEL-BH086_0.3m	30-Nov-2017	09-Nov-2017	21	01-Dec-2017	09-Nov-2017	22

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Matrix: 301E

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Hexavalent Chromium by Alkaline Digestion and DA Finish	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) NEL-BH086_0.3m	02-Nov-2017	01-Dec-2017	09-Nov-2017	✖	01-Dec-2017	01-Dec-2017	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) NEL-BH086_0.3m	02-Nov-2017	----	----	----	01-Dec-2017	16-Nov-2017	✖
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200) NEL-BH086_0.3m	02-Nov-2017	----	----	----	01-Dec-2017	01-May-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200) NEL-BH086_0.3m	02-Nov-2017	----	----	----	01-Dec-2017	01-May-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) NEL-BH086_0.3m	02-Nov-2017	30-Nov-2017	01-May-2018	✓	30-Nov-2017	01-May-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) NEL-BH086_0.3m	02-Nov-2017	30-Nov-2017	30-Nov-2017	✓	01-Dec-2017	30-Nov-2017	✖
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G) NEL-BH086_0.3m	02-Nov-2017	30-Nov-2017	30-Nov-2017	✓	01-Dec-2017	07-Dec-2017	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH086_0.3m	02-Nov-2017	01-Dec-2017	16-Nov-2017	✖	04-Dec-2017	15-Dec-2017	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T) NEL-BH086_0.3m	02-Nov-2017	30-Nov-2017	30-Nov-2017	✓	01-Dec-2017	30-Nov-2017	✖
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH086_0.3m	02-Nov-2017	01-Dec-2017	16-Nov-2017	✖	01-Dec-2017	10-Jan-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH086_0.3m	02-Nov-2017	30-Nov-2017	09-Nov-2017	✖	01-Dec-2017	09-Nov-2017	✖
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH086_0.3m	02-Nov-2017	30-Nov-2017	09-Nov-2017	✖	01-Dec-2017	09-Nov-2017	✖
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH086_0.3m	02-Nov-2017	30-Nov-2017	09-Nov-2017	✖	01-Dec-2017	09-Nov-2017	✖



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH086_0.3m	02-Nov-2017	01-Dec-2017	16-Nov-2017	✖	01-Dec-2017	10-Jan-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH086_0.3m	02-Nov-2017	01-Dec-2017	16-Nov-2017	✖	01-Dec-2017	10-Jan-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH086_0.3m	02-Nov-2017	01-Dec-2017	16-Nov-2017	✖	01-Dec-2017	10-Jan-2018	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH086_0.3m	02-Nov-2017	01-Dec-2017	16-Nov-2017	✖	01-Dec-2017	10-Jan-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH086_0.3m	02-Nov-2017	01-Dec-2017	16-Nov-2017	✖	01-Dec-2017	10-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH086_0.3m	02-Nov-2017	30-Nov-2017	09-Nov-2017	✖	01-Dec-2017	09-Nov-2017	✖
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH086_0.3m	02-Nov-2017	01-Dec-2017	16-Nov-2017	✖	01-Dec-2017	10-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH086_0.3m	02-Nov-2017	30-Nov-2017	09-Nov-2017	✖	01-Dec-2017	09-Nov-2017	✖



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	1	200.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Page : 7 of 9
 Work Order : EM1716457
 Client : GHD PTY LTD
 Project : 31350060803



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CERTIFICATE OF ANALYSIS

Work Order : **EM1801198**
Client : **GHD PTY LTD**
Contact : **DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **SCOTT HILLARD/ANDY SHEO/ASHLEY SIMPSON**
Site : **----**
Quote number : **EN/005/17**
No. of samples received : **4**
No. of samples analysed : **4**

Page : 1 of 9
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 12-Jan-2018 15:35
Date Analysis Commenced : 16-Jan-2018
Issue Date : 23-Jan-2018 12:15



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- **EA200: As only one sample container was submitted for multiple tests, at the client's request, sub sampling was conducted prior to Asbestos analysis. As this has the potential to understate detection, results should be scrutinised accordingly.**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH107_0.7m	NEL-BH107_2.0m	NEL-BH106_2.0m	NEL-BH106_3.0m	----
Client sampling date / time					10-Jan-2018 00:00	11-Jan-2018 00:00	12-Jan-2018 11:43	12-Jan-2018 12:26	----
Compound	CAS Number	LOR	Unit		EM1801198-001	EM1801198-002	EM1801198-003	EM1801198-004	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		5.3	7.4	7.3	7.5	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		19.8	14.6	12.1	15.2	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	----
Asbestos Type	1332-21-4	-	--		-	-	-	-	----
Sample weight (dry)	----	0.01	g		39.7	41.9	43.8	42.1	----
APPROVED IDENTIFIER:	----	-	--		E.DAOS	E.DAOS	E.DAOS	E.DAOS	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	<5	5	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		18	<5	14	10	----
Lead	7439-92-1	5	mg/kg		16	11	13	15	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		19	10	16	21	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		20	7	14	8	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		410	220	280	200	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH107_0.7m	NEL-BH107_2.0m	NEL-BH106_2.0m	NEL-BH106_3.0m	----
Client sampling date / time					10-Jan-2018 00:00	11-Jan-2018 00:00	12-Jan-2018 11:43	12-Jan-2018 12:26	----
Compound	CAS Number	LOR	Unit		EM1801198-001	EM1801198-002	EM1801198-003	EM1801198-004	-----
					Result	Result	Result	Result	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH107_0.7m	NEL-BH107_2.0m	NEL-BH106_2.0m	NEL-BH106_3.0m	----
Client sampling date / time					10-Jan-2018 00:00	11-Jan-2018 00:00	12-Jan-2018 11:43	12-Jan-2018 12:26	----
Compound	CAS Number	LOR	Unit		EM1801198-001	EM1801198-002	EM1801198-003	EM1801198-004	-----
					Result	Result	Result	Result	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	<1	<1	----
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	<1	<1	----
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	<5	<5	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	<5	<5	----
Dinoseb	88-85-7	5	mg/kg		<5	<5	<5	<5	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	<1	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH107_0.7m	NEL-BH107_2.0m	NEL-BH106_2.0m	NEL-BH106_3.0m	----
Client sampling date / time					10-Jan-2018 00:00	11-Jan-2018 00:00	12-Jan-2018 11:43	12-Jan-2018 12:26	----
Compound	CAS Number	LOR	Unit		EM1801198-001	EM1801198-002	EM1801198-003	EM1801198-004	-----
					Result	Result	Result	Result	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4.4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4.4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4.4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH107_0.7m	NEL-BH107_2.0m	NEL-BH106_2.0m	NEL-BH106_3.0m	----
Client sampling date / time					10-Jan-2018 00:00	11-Jan-2018 00:00	12-Jan-2018 11:43	12-Jan-2018 12:26	----
Compound	CAS Number	LOR	Unit		EM1801198-001	EM1801198-002	EM1801198-003	EM1801198-004	-----
					Result	Result	Result	Result	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		77.7	103	99.9	90.7	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		84.8	90.0	90.2	90.6	----
Toluene-D8	2037-26-5	0.1	%		88.9	93.0	85.9	92.9	----
4-Bromofluorobenzene	460-00-4	0.1	%		94.6	92.5	86.5	83.6	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		106	118	110	108	----
2-Chlorophenol-D4	93951-73-6	0.025	%		78.8	86.6	80.6	79.3	----
2,4,6-Tribromophenol	118-79-6	0.025	%		94.6	99.5	97.8	91.1	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		91.5	106	97.8	95.6	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		90.2	101	95.6	93.3	----
2-Fluorobiphenyl	321-60-8	0.025	%		89.4	104	98.8	95.7	----
Anthracene-d10	1719-06-8	0.025	%		114	120	127	120	----
4-Terphenyl-d14	1718-51-0	0.025	%		131	134	138	131	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	NEL-BH107_0.7m - 10-Jan-2018 00:00	Brown orange clay like soil with organic matter.
EA200: Description	NEL-BH107_2.0m - 11-Jan-2018 00:00	Tan orange clay like soil.
EA200: Description	NEL-BH106_2.0m - 12-Jan-2018 11:43	Brown orange clay like soil.
EA200: Description	NEL-BH106_3.0m - 12-Jan-2018 12:26	Brown orange clay like soil.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

CHAIN OF CUSTODY RECORD

GHD



Melbourne Office Address

180 Lonsdale Street, Melbourne 3000

Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

Quote # / GHD Reference

Page ____ of ____

Job Number 35006/0803		GHD Contact David Quinn		Laboratory: ALS SPRINGVALE	
Project North East Link Project		Address:		Laboratory Contact: Shirley LeCompte	
GHD Project Manager		GHD Contact David Quinn		Container	
GHD PM email David.Quinn@ghd.com		GHD Contact email		Analyses Required	
Sample I.D.	Date	Time	Composite Sample	Sample Mark	Volume (mL)
Lat 10					
REL-BM107-07a	10/1/15	AM			
<div style="display: flex; justify-content: space-between;"> <div> <p>TOTAL NUMBER OF SAMPLES: 1</p> <p>TOTAL NUMBER OF ESKIES: 1</p> <p>SAMPLES/ESKY CHILLED? Y/N: Y</p> </div> <div> <p>GENERAL COMMENTS:</p> </div> </div>					
CUSTODY DETAILS:					
SAMPLER	Name Scott Hilliard		Date/Time Received 10/1/15		Date/Time Relinquished 10/01/15
GHD SERVICE CENTRE					
COURIER	HARRIS (Ken)		10/1/15, 15:10		
LABORATORY					

COURIER AND LABORATORY INSTRUCTIONS:
 Sign **white copy** on receipt and release of samples.
 Samples are to be delivered to the Laboratory Address.
 On receipt of samples, the **laboratory contact**
 to sign white copy and fax/email to GHD Contact.
 On completion of analyses please **return white**
 copy with results.
Pink copy is returned to the sampler once the
 courier has signed for the samples.
E-mail results to the GHD Project Manager
 and GHD Contact with the GHD Job Number in the e-mail subject line.
Note email format: firstname.lastname@ghd.com
Results to be provided in ESDAT compatible format

SAMPLE COMMENTS

Environmental Division
 Melbourne
 Work Order Reference
EM1801198



Telephone: + 61-3 8549 9600

Page of



Quote # / GHD Reference

180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Job Number 31/35006/C803	GHD Contact David Quinn
Project North East Link Project.	
GHD Project Manager	GHD Contact David Quinn
GHD PM email	GHD Contact email David.Quinn@ghd.com

Laboratory: ALS SPRINGVALE
Address: _____
Laboratory Contact: Shirley LeCorno

COURIER AND LABORATORY INSTRUCTIONS:
Sign **white copy** on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, **the laboratory contact**
to sign white copy and fax/email to GHD Contact.
On completion of analyses please **return white**
copy with results.
Pink copy is returned to the sampler once the
courier has signed for the samples.
E-mail results to the GHD Project Manager
and **GHD Contact** with the GHD Job Number in the e-mail subject line.
Note email format: firstname.lastname@ghd.com
Results to be provided in ESDAT compatible format

Sample I.D.	Date	Time	Composite Sample	Sample Matrix S: Soil, SL: Sludge W: Water, A: Air GW: Groundwater	U: soil jar, B: bag V: vial, G: glass, bo: F: plastic bottle	Number	Volume (mL)	
Lead 10 NEL-BH107 - 2.0m	11/1/18		S	J	I	250	X	HOLD
NEL-BH107 - 2.0m	10/1/18		S	J	I	250	X	
extra sample								
extra								

SAMPLE COMMENTS

TOTAL NUMBER OF SAMPLES

GENERAL COMMENTS:

TOTAL NUMBER OF ESKIES:

SAMPLES/ESKY CHILLED? Y/N

David Quinn - 0437 227 626

CUSTODY DETAILS:

Name

ANDY SHEO

Date/Time Received

11/01/18 AM

Date/Time Relinquished

11/01/18 3:10pm

SAMPLER

GHD SERVICE CENTRE

COURIER

LABORATORY

Scot (ALS)

11/6/8 3:10 pm

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 11 January 2018 2:35 PM
To: Shirley LeCornu
Subject: RE: EM1801198 - GHD - 31/35006/0803

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Shirley,

There will be some more samples coming through so we'll hold off analysing at the moment, so they can be done in a batch.

The analysis will be VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Thanks,

David Quinn
Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
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Please consider our environment before printing this email

From: Shirley LeCornu [<mailto:shirley.lecornu@alsglobal.com>]
Sent: Thursday, 11 January 2018 9:07 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1801198 - GHD - 31/35006/0803

Hi David

Can you please let me know analysis required for the samples we received yesterday. COC attached.

Thanks

Shirley

Shirley LeCornu
Client Services Officer – Springvale
Environmental



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**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1801198**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 31350060803	Page	: 1 of 2
Order number	: ----	Quote number	: EB2017GHDSE0022 (EN/005/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: SCOTT HILLARD/ANDY SHEO/ASHLEY SIMPSON		

Dates

Date Samples Received	: 12-Jan-2018 15:35	Issue Date	: 16-Jan-2018
Client Requested Due Date	: 23-Jan-2018	Scheduled Reporting Date	: 23-Jan-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 6.3°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 4 / 4

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **EA200: As only one sample container was submitted for multiple tests, at the client's request, sub sampling was conducted prior to Asbestos analysis. As this has the potential to understate detection, results should be scrutinised accordingly.**

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Asbestos Identification in Soils : EA200		
NEL-BH107_0.7m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH107_2.0m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH106_2.0m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH106_3.0m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - F: Moisture	SOIL - F: Asbestos	SOIL - F: IWRG 6
EM1801198-001	10-Jan-2018 00:00	NEL-BH107_0.7m	✓	✓	✓
EM1801198-002	11-Jan-2018 00:00	NEL-BH107_2.0m	✓	✓	✓
EM1801198-003	12-Jan-2018 11:43	NEL-BH106_2.0m	✓	✓	✓
EM1801198-004	12-Jan-2018 12:26	NEL-BH106_3.0m	✓	✓	✓

Sample(s) have been received within the recommended holding times for the requested analysis.

ACCOUNTS PAYABLE (Brisbane)

- Email ap-fss@ghd.com

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1801198	Page	: 1 of 12
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 12-Jan-2018
Order number	: ----	Date Analysis Commenced	: 16-Jan-2018
C-O-C number	: ----	Issue Date	: 23-Jan-2018
Sampler	: SCOTT HILLARD/ANDY SHEO/ASHLEY SIMPSON		
Site	: ----		
Quote number	: EN/005/17		
No. of samples received	: 4		
No. of samples analysed	: 4		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Herman Lin	Laboratory Manager	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1373492)									
EM1801198-001	NEL-BH107_0.7m	EA001: pH (CaCl2)	----	0.1	pH Unit	5.3	5.5	3.70	0% - 20%
EM1801436-001	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.8	7.8	0.00	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1376272)									
EM1801198-003	NEL-BH106_2.0m	EA001: pH (CaCl2)	----	0.1	pH Unit	7.3	7.4	1.36	0% - 20%
EM1801505-036	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.2	7.2	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1373577)									
EM1801198-001	NEL-BH107_0.7m	EA055: Moisture Content	----	1	%	19.8	18.2	8.30	0% - 50%
EM1801461-014	Anonymous	EA055: Moisture Content	----	1	%	16.6	15.4	7.04	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1378722)									
EM1801198-001	NEL-BH107_0.7m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	19	19	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	18	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	16	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	20	19	0.00	No Limit
EM1801498-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	15	14	12.6	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1378722) - continued									
EM1801498-002	Anonymous	EG005T: Copper	7440-50-8	5	mg/kg	23	20	12.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	10	21.4	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	29	26	13.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1378721)									
EM1801198-001	NEL-BH107_0.7m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1801498-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1376091)									
EM1801198-001	NEL-BH107_0.7m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1801522-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1378824)									
EM1801198-001	NEL-BH107_0.7m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	1	1	0.00	No Limit
EM1801522-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1372434)									
EM1801198-001	NEL-BH107_0.7m	EK040T: Fluoride	16984-48-8	40	mg/kg	410	440	5.66	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1376014)									
EM1801198-001	NEL-BH107_0.7m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1801525-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1371914)									
EM1801198-001	NEL-BH107_0.7m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074H: Naphthalene (QC Lot: 1371914)							
EM1801198-001	NEL-BH107_0.7m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1371914)									
EM1801198-001	NEL-BH107_0.7m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1371914) - continued									
EM1801198-001	NEL-BH107_0.7m	EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1376012)									
EM1801198-001	NEL-BH107_0.7m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1801525-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1376012)									
EM1801198-001	NEL-BH107_0.7m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1376012) - continued									
EM1801198-001	NEL-BH107_0.7m	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1801525-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1376012)									
EM1801198-001	NEL-BH107_0.7m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EM1801525-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1376012) - continued									
EM1801525-002	Anonymous	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1376012)									
EM1801198-001	NEL-BH107_0.7m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1801525-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1376012) - continued									
EM1801525-002	Anonymous	EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1371914)									
EM1801198-001	NEL-BH107_0.7m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1376013)									
EM1801198-001	NEL-BH107_0.7m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1801525-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1371914)									
EM1801198-001	NEL-BH107_0.7m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1376013)									
EM1801198-001	NEL-BH107_0.7m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1801525-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1378722)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	98.2	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.4	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	97.3	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.3	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	93.4	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	103	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	100	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	96.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	108	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	103	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1378721)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	92.3	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1376091)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	98.6	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1378824)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	89.1	80	110
EK040T: Fluoride Total (QCLot: 1372434)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	85.5	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1376014)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	76.6	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1371914)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	95.1	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	97.6	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	93.7	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	89.7	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	92.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	92.5	74	114
EP074H: Naphthalene (QCLot: 1371914)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	98.4	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1371914)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	102	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	95.8	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1371914) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	91.9	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	94.0	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	92.0	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	93.3	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	104	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	101	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	96.7	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	94.4	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	99.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	101	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	103	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	98.3	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	89.1	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	92.4	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	91.2	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	94.2	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	90.9	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1376012)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	79.8	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	69.4	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	79.8	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	69.4	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	77.8	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	68.9	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	81.2	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	83.4	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	72.2	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1376012)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	74.9	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	82.4	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	75.5	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	68.8	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	84.4	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	108	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	81.4	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	81.3	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	88.5	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	87.0	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1376012)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	79.3	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	109	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	74.5	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	82.2	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	85.8	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	1 mg/kg	106	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	83.5	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	85.0	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	86.2	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	89.8	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	95.4	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	90.4	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	96.2	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	96.5	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	95.5	55	137
EP075I: Organochlorine Pesticides (QCLot: 1376012)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	80.4	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	77.8	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	82.7	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	81.2	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	88.0	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	82.1	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	82.8	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	82.5	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	84.9	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	82.9	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	85.6	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	89.1	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	86.5	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	90.4	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	87.9	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	87.8	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	85.2	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	87.8	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	86.4	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	86.6	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1371914)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	104	69	114

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1378722)							
EM1801198-002	NEL-BH107_2.0m	EG005T: Arsenic	7440-38-2	50 mg/kg	88.1	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.7	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	95.5	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	86.2	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	79.1	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	88.5	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	88.3	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	96.0	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1378721)							
EM1801198-002	NEL-BH107_2.0m	EG035T: Mercury	7439-97-6	5 mg/kg	76.4	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1376091)							
EM1801198-002	NEL-BH107_2.0m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	90.5	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1378824)							
EM1801198-002	NEL-BH107_2.0m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	80.7	77	113
EK040T: Fluoride Total (QCLot: 1372434)							
EM1801198-002	NEL-BH107_2.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	102	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1376014)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1376014) - continued							
EM1801198-004	NEL-BH106_3.0m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	85.4	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1371914)							
EM1801198-002	NEL-BH107_2.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	87.6	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	87.0	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1371914)							
EM1801198-002	NEL-BH107_2.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	91.7	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	84.5	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	84.2	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1376012)							
EM1801198-002	NEL-BH107_2.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	99.8	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	86.8	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	49.4	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1376012)							
EM1801198-002	NEL-BH107_2.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	94.4	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	70.7	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1376012)							
EM1801198-002	NEL-BH107_2.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	98.4	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	115	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1371914)							
EM1801198-002	NEL-BH107_2.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	80.9	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1376013)							
EM1801198-003	NEL-BH106_2.0m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	97.2	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	97.3	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	94.0	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1371914)							
EM1801198-002	NEL-BH107_2.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	74.0	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1376013)							
EM1801198-003	NEL-BH106_2.0m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	95.0	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	97.0	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	91.3	44	126

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1801198	Page	: 1 of 9
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 12-Jan-2018
Site	: ----	Issue Date	: 23-Jan-2018
Sampler	: SCOTT HILLARD/ANDY SHEO/ASHLEY SIMPSON	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA001: pH in soil using 0.01M CaCl extract						
Soil Glass Jar - Unpreserved NEL-BH106_2.0m, NEL-BH106_3.0m	----	----	----	19-Jan-2018	18-Jan-2018	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) NEL-BH107_0.7m	10-Jan-2018	17-Jan-2018	17-Jan-2018	✓	17-Jan-2018	17-Jan-2018	✓
Soil Glass Jar - Unpreserved (EA001) NEL-BH107_2.0m	11-Jan-2018	17-Jan-2018	18-Jan-2018	✓	17-Jan-2018	17-Jan-2018	✓
Soil Glass Jar - Unpreserved (EA001) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	18-Jan-2018	19-Jan-2018	✓	19-Jan-2018	18-Jan-2018	✗
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) NEL-BH107_0.7m	10-Jan-2018	----	----	----	17-Jan-2018	24-Jan-2018	✓
Soil Glass Jar - Unpreserved (EA055) NEL-BH107_2.0m	11-Jan-2018	----	----	----	17-Jan-2018	25-Jan-2018	✓
Soil Glass Jar - Unpreserved (EA055) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	----	----	----	17-Jan-2018	26-Jan-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH107_0.7m	10-Jan-2018	----	----	----	17-Jan-2018	09-Jul-2018	✓
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH107_2.0m	11-Jan-2018	----	----	----	17-Jan-2018	10-Jul-2018	✓
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	----	----	----	17-Jan-2018	11-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH107_0.7m	10-Jan-2018	----	----	----	17-Jan-2018	09-Jul-2018	✓
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH107_2.0m	11-Jan-2018	----	----	----	17-Jan-2018	10-Jul-2018	✓
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	----	----	----	17-Jan-2018	11-Jul-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) NEL-BH107_0.7m	10-Jan-2018	19-Jan-2018	09-Jul-2018	✓	19-Jan-2018	09-Jul-2018	✓
Soil Glass Jar - Unpreserved (EG005T) NEL-BH107_2.0m	11-Jan-2018	19-Jan-2018	10-Jul-2018	✓	19-Jan-2018	10-Jul-2018	✓
Soil Glass Jar - Unpreserved (EG005T) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	19-Jan-2018	11-Jul-2018	✓	19-Jan-2018	11-Jul-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) NEL-BH107_0.7m	10-Jan-2018	19-Jan-2018	07-Feb-2018	✓	22-Jan-2018	07-Feb-2018	✓
Soil Glass Jar - Unpreserved (EG035T) NEL-BH107_2.0m	11-Jan-2018	19-Jan-2018	08-Feb-2018	✓	22-Jan-2018	08-Feb-2018	✓
Soil Glass Jar - Unpreserved (EG035T) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	19-Jan-2018	09-Feb-2018	✓	22-Jan-2018	09-Feb-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G) NEL-BH107_0.7m	10-Jan-2018	18-Jan-2018	07-Feb-2018	✓	18-Jan-2018	25-Jan-2018	✓
Soil Glass Jar - Unpreserved (EG048G) NEL-BH107_2.0m	11-Jan-2018	18-Jan-2018	08-Feb-2018	✓	18-Jan-2018	25-Jan-2018	✓
Soil Glass Jar - Unpreserved (EG048G) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	18-Jan-2018	09-Feb-2018	✓	18-Jan-2018	25-Jan-2018	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH107_0.7m	10-Jan-2018	19-Jan-2018	24-Jan-2018	✓	22-Jan-2018	02-Feb-2018	✓
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH107_2.0m	11-Jan-2018	19-Jan-2018	25-Jan-2018	✓	22-Jan-2018	02-Feb-2018	✓
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	19-Jan-2018	26-Jan-2018	✓	22-Jan-2018	02-Feb-2018	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T) NEL-BH107_0.7m	10-Jan-2018	16-Jan-2018	07-Feb-2018	✓	18-Jan-2018	07-Feb-2018	✓
Soil Glass Jar - Unpreserved (EK040T) NEL-BH107_2.0m	11-Jan-2018	16-Jan-2018	08-Feb-2018	✓	18-Jan-2018	08-Feb-2018	✓
Soil Glass Jar - Unpreserved (EK040T) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	16-Jan-2018	09-Feb-2018	✓	18-Jan-2018	09-Feb-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH107_0.7m	10-Jan-2018	18-Jan-2018	24-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH107_2.0m	11-Jan-2018	18-Jan-2018	25-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	18-Jan-2018	26-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH107_0.7m	10-Jan-2018	16-Jan-2018	17-Jan-2018	✓	17-Jan-2018	17-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH107_2.0m	11-Jan-2018	16-Jan-2018	18-Jan-2018	✓	17-Jan-2018	18-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	16-Jan-2018	19-Jan-2018	✓	17-Jan-2018	19-Jan-2018	✓
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH107_0.7m	10-Jan-2018	16-Jan-2018	17-Jan-2018	✓	17-Jan-2018	17-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH107_2.0m	11-Jan-2018	16-Jan-2018	18-Jan-2018	✓	17-Jan-2018	18-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	16-Jan-2018	19-Jan-2018	✓	17-Jan-2018	19-Jan-2018	✓
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH107_0.7m	10-Jan-2018	16-Jan-2018	17-Jan-2018	✓	17-Jan-2018	17-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH107_2.0m	11-Jan-2018	16-Jan-2018	18-Jan-2018	✓	17-Jan-2018	18-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	16-Jan-2018	19-Jan-2018	✓	17-Jan-2018	19-Jan-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH107_0.7m	10-Jan-2018	18-Jan-2018	24-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH107_2.0m	11-Jan-2018	18-Jan-2018	25-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	18-Jan-2018	26-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH107_0.7m	10-Jan-2018	18-Jan-2018	24-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH107_2.0m	11-Jan-2018	18-Jan-2018	25-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	18-Jan-2018	26-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH107_0.7m	10-Jan-2018	18-Jan-2018	24-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH107_2.0m	11-Jan-2018	18-Jan-2018	25-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	18-Jan-2018	26-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH107_0.7m	10-Jan-2018	18-Jan-2018	24-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH107_2.0m	11-Jan-2018	18-Jan-2018	25-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	18-Jan-2018	26-Jan-2018	✓	19-Jan-2018	27-Feb-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH107_0.7m	10-Jan-2018	16-Jan-2018	17-Jan-2018	✓	17-Jan-2018	17-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH107_0.7m	10-Jan-2018	18-Jan-2018	24-Jan-2018	✓	18-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH107_2.0m	11-Jan-2018	16-Jan-2018	18-Jan-2018	✓	17-Jan-2018	18-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH107_2.0m	11-Jan-2018	18-Jan-2018	25-Jan-2018	✓	18-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	16-Jan-2018	19-Jan-2018	✓	17-Jan-2018	19-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	18-Jan-2018	26-Jan-2018	✓	18-Jan-2018	27-Feb-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH107_0.7m	10-Jan-2018	16-Jan-2018	17-Jan-2018	✓	17-Jan-2018	17-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH107_0.7m	10-Jan-2018	18-Jan-2018	24-Jan-2018	✓	18-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH107_2.0m	11-Jan-2018	16-Jan-2018	18-Jan-2018	✓	17-Jan-2018	18-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH107_2.0m	11-Jan-2018	18-Jan-2018	25-Jan-2018	✓	18-Jan-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	16-Jan-2018	19-Jan-2018	✓	17-Jan-2018	19-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH106_2.0m, NEL-BH106_3.0m	12-Jan-2018	18-Jan-2018	26-Jan-2018	✓	18-Jan-2018	27-Feb-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

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 Work Order : EM1801198
 Client : GHD PTY LTD
 Project : 31350060803



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CERTIFICATE OF ANALYSIS

Work Order : **EM1801471**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **SCOTT HILLIARD**
Site : **----**
Quote number : **North East Link**
No. of samples received : **9**
No. of samples analysed : **9**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 18-Jan-2018 16:50
Date Analysis Commenced : 22-Jan-2018
Issue Date : 25-Jan-2018 14:45



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EP074-UT: Particular sample (EM1801471_004) shows minor Tetrachloroethene hit. Confirmed by re-analysis.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH128_0.5m	NEL-BH125_0.4m	NEL-BH125_0.75m	NEL-BH125_1.0m	NEL-BH125_1.5m
Client sampling date / time					15-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1801471-001	EM1801471-002	EM1801471-003	EM1801471-004	EM1801471-005
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.4	6.6	6.7	7.4	7.4
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		17.4	12.8	16.8	21.5	16.2
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No*
Asbestos Type	1332-21-4	-	--		-	-	-	-	Ch + Am + Cr
Sample weight (dry)	----	0.01	g		103	192	49.9	101	163
APPROVED IDENTIFIER:	----	-	--		E.DAOS	E.DAOS	E.DAOS	E.DAOS	E.DAOS
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	21	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	1	<1
Copper	7440-50-8	5	mg/kg		11	14	22200	92	21
Lead	7439-92-1	5	mg/kg		16	27	33	242	5390
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	2	<2
Nickel	7440-02-0	2	mg/kg		19	12	17	39	9
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	410	199
Zinc	7440-66-6	5	mg/kg		42	42	10700	634	426
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		320	240	230	140	80
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH128_0.5m	NEL-BH125_0.4m	NEL-BH125_0.75m	NEL-BH125_1.0m	NEL-BH125_1.5m
Client sampling date / time					15-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1801471-001	EM1801471-002	EM1801471-003	EM1801471-004	EM1801471-005
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	0.11	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	0.11	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	0.11	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH128_0.5m	NEL-BH125_0.4m	NEL-BH125_0.75m	NEL-BH125_1.0m	NEL-BH125_1.5m
Client sampling date / time					15-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1801471-001	EM1801471-002	EM1801471-003	EM1801471-004	EM1801471-005
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg		<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH128_0.5m	NEL-BH125_0.4m	NEL-BH125_0.75m	NEL-BH125_1.0m	NEL-BH125_1.5m
Client sampling date / time				15-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00
Compound	CAS Number	LOR	Unit	EM1801471-001	EM1801471-002	EM1801471-003	EM1801471-004	EM1801471-005
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH128_0.5m	NEL-BH125_0.4m	NEL-BH125_0.75m	NEL-BH125_1.0m	NEL-BH125_1.5m
Client sampling date / time					15-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1801471-001	EM1801471-002	EM1801471-003	EM1801471-004	EM1801471-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		82.9	89.7	83.3	82.1	89.5
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		96.0	102	99.1	85.3	92.6
Toluene-D8	2037-26-5	0.1	%		90.2	97.2	92.4	85.2	86.7
4-Bromofluorobenzene	460-00-4	0.1	%		99.4	111	111	97.7	95.0
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		104	112	91.8	100	88.0
2-Chlorophenol-D4	93951-73-6	0.025	%		81.3	88.1	71.0	77.8	62.9
2,4,6-Tribromophenol	118-79-6	0.025	%		96.5	102	83.7	88.0	90.0
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		98.0	106	88.2	97.1	79.8
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		95.8	105	86.4	93.3	76.9
2-Fluorobiphenyl	321-60-8	0.025	%		100.0	108	90.4	94.1	88.2
Anthracene-d10	1719-06-8	0.025	%		118	126	104	110	95.8
4-Terphenyl-d14	1718-51-0	0.025	%		133	141	115	122	104



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH126_0.3m	NEL-BH126_0.7m	NEL-BH126_1.0m	NEL-BH126_1.5m	----
Client sampling date / time					17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1801471-006	EM1801471-007	EM1801471-008	EM1801471-009	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.5	6.5	5.8	6.7	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		20.1	16.7	18.3	24.0	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	----
Asbestos Type	1332-21-4	-	--		-	-	-	-	----
Sample weight (dry)	----	0.01	g		166	126	84.5	144	----
APPROVED IDENTIFIER:	----	-	--		E.DAOS	E.DAOS	E.DAOS	E.DAOS	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	6	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		14	7	9	15	----
Lead	7439-92-1	5	mg/kg		25	13	14	10	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		21	10	11	14	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		88	24	18	26	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		190	240	280	320	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH126_0.3m	NEL-BH126_0.7m	NEL-BH126_1.0m	NEL-BH126_1.5m	----
Client sampling date / time					17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1801471-006	EM1801471-007	EM1801471-008	EM1801471-009	-----
					Result	Result	Result	Result	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH126_0.3m	NEL-BH126_0.7m	NEL-BH126_1.0m	NEL-BH126_1.5m	----
Client sampling date / time					17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1801471-006	EM1801471-007	EM1801471-008	EM1801471-009	-----
					Result	Result	Result	Result	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	<1	<1	----
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	<1	<1	----
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	<5	<5	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	<5	<5	----
Dinoseb	88-85-7	5	mg/kg		<5	<5	<5	<5	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	<1	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH126_0.3m	NEL-BH126_0.7m	NEL-BH126_1.0m	NEL-BH126_1.5m	----
Client sampling date / time					17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1801471-006	EM1801471-007	EM1801471-008	EM1801471-009	-----
					Result	Result	Result	Result	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH126_0.3m	NEL-BH126_0.7m	NEL-BH126_1.0m	NEL-BH126_1.5m	----
Client sampling date / time					17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1801471-006	EM1801471-007	EM1801471-008	EM1801471-009	-----
					Result	Result	Result	Result	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		92.8	94.6	110	85.8	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		91.6	94.0	89.0	88.0	----
Toluene-D8	2037-26-5	0.1	%		86.6	88.7	84.9	83.1	----
4-Bromofluorobenzene	460-00-4	0.1	%		93.3	103	100	92.5	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		104	109	113	108	----
2-Chlorophenol-D4	93951-73-6	0.025	%		76.5	74.4	84.5	72.6	----
2,4,6-Tribromophenol	118-79-6	0.025	%		99.2	93.9	108	92.7	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		97.9	95.6	106	92.7	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		96.0	92.2	103	91.1	----
2-Fluorobiphenyl	321-60-8	0.025	%		105	102	112	99.2	----
Anthracene-d10	1719-06-8	0.025	%		109	108	114	102	----
4-Terphenyl-d14	1718-51-0	0.025	%		121	123	131	119	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	NEL-BH128_0.5m - 15-Jan-2018 00:00	Brown soil.
EA200: Description	NEL-BH125_0.4m - 17-Jan-2018 00:00	Brown soil.
EA200: Description	NEL-BH125_0.75m - 17-Jan-2018 00:00	Brown soil with organic matter.
EA200: Description	NEL-BH125_1.0m - 17-Jan-2018 00:00	Brown soil with organic matter.
EA200: Description	NEL-BH125_1.5m - 17-Jan-2018 00:00	Brown soil with rock matter plus multiple asbestos fibre bundles approx 3 x 1 x 1mm.
EA200: Description	NEL-BH126_0.3m - 17-Jan-2018 00:00	Brown soil with organic matter.
EA200: Description	NEL-BH126_0.7m - 17-Jan-2018 00:00	Brown soil with organic matter.
EA200: Description	NEL-BH126_1.0m - 17-Jan-2018 00:00	Brown soil.
EA200: Description	NEL-BH126_1.5m - 17-Jan-2018 00:00	Brown soil.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

GHD



Email: mwlmail@ghd.com.au

[illegible]

Sampled by: Scott Hilliard	Date/Time pm 15/01/18	Relinquished by: Scott Hilliard	Date/Time Am 16/01/18
Received by: N. Francis	Date/Time 16/1/18 800	Relinquished by: N.F	Date/Time 16/1/2018 9.30
Received by Courier: X BIKRAM (JET)	Date/Time X 16/01/18 9.30	Relinquished by:	Date/Time
Received by Lab: Koon (Am)	Date/Time 16/1/18 10.00		
Remarks:			

CHAIN OF CUSTODY RECORD

Page 1 of 1

GHD



Melbourne Office Address

180 Lonsdale Street, Melbourne 3000

Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

Quote # / GHD Reference

Job Number 31/35006/0803		GHD Contact		Laboratory: ALS SPRINGVALE		COURIER AND LABORATORY INSTRUCTIONS: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Project Manager and GHD Contact with the GHD Job Number in the e-mail subject line. Note email format: firstname.lastname@ghd.com Results to be provided in ESDAT compatible format																					
Project North East Link Project		GHD Contact		Address:												Laboratory Contact: SHIRLEY											
GHD Project Manager David Quinn		GHD Contact		Container												Analyses Required											
GHD PM email David.Quinn@ghd.com		GHD Contact email		Type		Type																					
Sample ID		Date	Time	Composite Sample	Sample Matrix S: Soil, SL: Sludge W: Water, A: Air GW: Groundwater	J: soil jar, B: bag V: vat, G: glass bottle P: plastic bottle	Number	Volume (mL)																			
NEL-BH125-0.4m		AM	17/01	/	S	J	1	X																			
" -0.4m		"	"	/	"	B	2	X																			
" -0.75m		"	"	/	"	J	3	X																			
" -0.75m		"	"	/	"	B	4	X																			
" -1.0m		"	"	/	"	T	5	X																			
" -1.0m		"	"	/	"	B	6	X																			
" -1.5m		"	"	/	"	J	7	X																			
" -1.5m		"	"	/	"	B	8	X																			
NEL-BH116-0.3m		PM	"	/	"	J	9	X																			
" -0.3m		"	"	/	"	B	10	X																			
" -0.7m		"	"	/	"	J	11	X																			
" -0.7m		"	"	/	"	B	12	X																			
" -1.0m		"	"	/	"	J	13	X																			
" -1.0m		"	"	/	"	B	14	X																			
" -1.5m		"	"	/	"	J	15	X																			
" -1.5m		"	"	/	"	B	16	X																			
TOTAL NUMBER OF SAMPLES:		16		GENERAL COMMENTS																							
TOTAL NUMBER OF ESKIES:		1																									
SAMPLES/ESKY CHILLED? Y/N		Y																									
CUSTODY DETAILS:																											
SAMPLER		Name Scott Hilliard		Date/Time Received PM 17/01/18		Date/Time Relinquished 18/01/18 16:05pm																					
GHD SERVICE CENTRE																											
COURIER		Post 27		16:05 18/01/18																							
LABORATORY		ANIL		18/01/18		16:00																					

SAMPLE COMMENTS

All Samples
may have
potential
ACM.

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 11 January 2018 2:35 PM
To: Shirley LeCornu
Subject: RE: EM1801198 - GHD - 31/35006/0803

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Shirley,

There will be some more samples coming through so we'll hold off analysing at the moment, so they can be done in a batch.

The analysis will be VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Thanks,

David Quinn

Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

Please consider our environment before printing this email

From: Shirley LeCornu [mailto:shirley.lecornu@alsglobal.com]
Sent: Thursday, 11 January 2018 9:07 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1801198 - GHD - 31/35006/0803

Hi David

Can you please let me know analysis required for the samples we received yesterday. COC attached.

Thanks

Shirley

Shirley LeCornu
Client Services Officer – Springvale
Environmental



T +61 3 8549 9600 **D** +61 3 8549 9630
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Shirley.lecornu@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

We are keen for your feedback! [Please click here for your 1 question survey](#)

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1801471

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 31350060803	Page	: 1 of 3
Order number	: ----	Quote number	: EB2017GHDSE0022 (EN/005/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link		
Sampler	: SCOTT HILLIARD		

Dates

Date Samples Received	: 18-Jan-2018 16:50	Issue Date	: 20-Jan-2018
Client Requested Due Date	: 25-Jan-2018	Scheduled Reporting Date	: 25-Jan-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.6°C, 14.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 9 / 9

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Hexavalent Chromium by Alkaline Digestion and DA Finish : EG048G		
NEL-BH126_1.0m	- Plastic Bag	- Soil Glass Jar - Unpreserved
NEL-BH126_1.5m	- Plastic Bag	- Soil Glass Jar - Unpreserved
Moisture Content : EA055		
NEL-BH126_1.0m	- Plastic Bag	- Soil Glass Jar - Unpreserved
NEL-BH126_1.5m	- Plastic Bag	- Soil Glass Jar - Unpreserved
PCB - VIC EPA 448.3 Screen : EP066-EM		
NEL-BH126_1.0m	- Plastic Bag	- Soil Glass Jar - Unpreserved
NEL-BH126_1.5m	- Plastic Bag	- Soil Glass Jar - Unpreserved
pH in soil using a 0.01M CaCl2 extract : EA001		
NEL-BH126_1.0m	- Plastic Bag	- Soil Glass Jar - Unpreserved
NEL-BH126_1.5m	- Plastic Bag	- Soil Glass Jar - Unpreserved
Semivolatile Organic Compounds - Waste Classification : EP075-EM		
NEL-BH126_1.0m	- Plastic Bag	- Soil Glass Jar - Unpreserved
NEL-BH126_1.5m	- Plastic Bag	- Soil Glass Jar - Unpreserved
Total Cyanide by Segmented Flow Analyser : EK026SF		
NEL-BH126_1.0m	- Plastic Bag	- Soil Glass Jar - Unpreserved
NEL-BH126_1.5m	- Plastic Bag	- Soil Glass Jar - Unpreserved
Total Fluoride : EK040T		
NEL-BH126_1.0m	- Plastic Bag	- Pulp Bag
NEL-BH126_1.5m	- Plastic Bag	- Pulp Bag
Total Mercury by FIMS : EG035T		
NEL-BH126_1.0m	- Plastic Bag	- Soil Glass Jar - Unpreserved
NEL-BH126_1.5m	- Plastic Bag	- Soil Glass Jar - Unpreserved
Total Metals by ICP-AES : EG005T		
NEL-BH126_1.0m	- Plastic Bag	- Soil Glass Jar - Unpreserved
NEL-BH126_1.5m	- Plastic Bag	- Soil Glass Jar - Unpreserved
TRH - Semivolatile Fraction : EP071-EM		
NEL-BH126_1.0m	- Plastic Bag	- Soil Glass Jar - Unpreserved
NEL-BH126_1.5m	- Plastic Bag	- Soil Glass Jar - Unpreserved
Volatile Organic Compounds - Ultra-trace : EP074-UT		
NEL-BH126_1.0m	- Plastic Bag	- Soil Glass Jar - Unpreserved
NEL-BH126_1.5m	- Plastic Bag	- Soil Glass Jar - Unpreserved

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200 Asbestos Identification in Soils -	SOIL - P-16 WRG 621
EM1801471-001	15-Jan-2018 00:00	NEL-BH128_0.5m	✓	✓	✓
EM1801471-002	17-Jan-2018 00:00	NEL-BH125_0.4m	✓	✓	✓
EM1801471-003	17-Jan-2018 00:00	NEL-BH125_0.75m	✓	✓	✓
EM1801471-004	17-Jan-2018 00:00	NEL-BH125_1.0m	✓	✓	✓
EM1801471-005	17-Jan-2018 00:00	NEL-BH125_1.5m	✓	✓	✓
EM1801471-006	17-Jan-2018 00:00	NEL-BH126_0.3m	✓	✓	✓
EM1801471-007	17-Jan-2018 00:00	NEL-BH126_0.7m	✓	✓	✓
EM1801471-008	17-Jan-2018 00:00	NEL-BH126_1.0m	✓	✓	✓

QUALITY CONTROL REPORT

Work Order	: EM1801471	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 18-Jan-2018
Order number	: ----	Date Analysis Commenced	: 22-Jan-2018
C-O-C number	: ----	Issue Date	: 25-Jan-2018
Sampler	: SCOTT HILLIARD		
Site	: ----		
Quote number	: North East Link		
No. of samples received	: 9		
No. of samples analysed	: 9		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1381602)									
EM1801471-001	NEL-BH128_0.5m	EA001: pH (CaCl2)	----	0.1	pH Unit	6.4	6.4	0.00	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1382864)									
EM1801471-002	NEL-BH125_0.4m	EA001: pH (CaCl2)	----	0.1	pH Unit	6.6	6.6	0.00	0% - 20%
EM1801555-001	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	5.6	6.0	6.90	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1382440)									
EM1801471-001	NEL-BH128_0.5m	EA055: Moisture Content	----	1	%	17.4	18.5	5.94	0% - 50%
EM1801551-017	Anonymous	EA055: Moisture Content	----	1	%	19.9	19.8	0.890	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1382755)									
EM1801371-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	8	8	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	22	21	6.55	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	44	43	0.00	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	7	8	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	18	18	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	293	314	7.11	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	133	146	9.34	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	124	109	13.1	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	1810	1940	7.09	0% - 20%
EM1801471-009	NEL-BH126_1.5m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	14	20	34.6	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	15	17	8.23	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1382755) - continued									
EM1801471-009	NEL-BH126_1.5m	EG005T: Lead	7439-92-1	5	mg/kg	10	13	22.5	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	26	25	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1382756)									
EM1801371-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.4	0.3	32.6	No Limit
EM1801471-009	NEL-BH126_1.5m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1381956)									
EM1801471-001	NEL-BH128_0.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1801471-009	NEL-BH126_1.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1385526)									
EM1801471-001	NEL-BH128_0.5m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1801588-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	40	33	19.9	0% - 20%
EK040T: Fluoride Total (QC Lot: 1382075)									
EM1801471-001	NEL-BH128_0.5m	EK040T: Fluoride	16984-48-8	40	mg/kg	320	320	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1381621)									
EM1801471-001	NEL-BH128_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1801555-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1381591)									
EM1801471-001	NEL-BH128_0.5m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1801695-001	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1381591)									
EM1801471-001	NEL-BH128_0.5m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1801695-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1381591)									
EM1801471-001	NEL-BH128_0.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1381591) - continued									
EM1801471-001	NEL-BH128_0.5m	EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1801695-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1381617)							
EM1801471-001	NEL-BH128_0.5m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1381617) - continued									
EM1801471-001	NEL-BH128_0.5m	EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1801555-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: Pentachlorophenol		87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1381617)									
EM1801471-001	NEL-BH128_0.5m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1801555-001	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1381617)									
EM1801471-001	NEL-BH128_0.5m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1381617) - continued									
EM1801471-001	NEL-BH128_0.5m	EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EM1801555-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5
EP075-EM: Acenaphthene	83-32-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Acenaphthylene	208-96-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Fluorene	86-73-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Phenanthrene	85-01-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Anthracene	120-12-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Fluoranthene	206-44-0			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Pyrene	129-00-0			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benz(a)anthracene	56-55-3			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Chrysene	218-01-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(a)pyrene	50-32-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(g.h.i)perylene	191-24-2			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1381617)									
EM1801471-001	NEL-BH128_0.5m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1381617) - continued									
EM1801471-001	NEL-BH128_0.5m	EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1801555-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1381591)									
EM1801471-001	NEL-BH128_0.5m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1801695-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1381620)									
EM1801471-001	NEL-BH128_0.5m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1801555-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

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 Work Order : EM1801471
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1381620) - continued									
EM1801555-001	Anonymous	EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1381591)									
EM1801471-001	NEL-BH128_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1801695-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1381620)									
EM1801471-001	NEL-BH128_0.5m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1801555-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1382755)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	88.5	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	87.2	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	88.5	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	82.2	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	87.9	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	95.5	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	95.5	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	95.3	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1382756)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	87.9	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1381956)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	97.6	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1385526)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	88.4	80	110
EK040T: Fluoride Total (QCLot: 1382075)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	87.6	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1381621)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	79.4	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1381591)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	91.7	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	88.8	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	86.7	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	84.5	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	88.9	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	86.1	74	114
EP074H: Naphthalene (QCLot: 1381591)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	92.3	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1381591)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	109	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	85.9	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1381591) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	96.2	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	86.6	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	94.5	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	90.6	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	89.6	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	87.8	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	88.8	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	95.5	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	96.9	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	88.5	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	106	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	86.5	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	90.2	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	91.9	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	93.8	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	81.2	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1381617)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	93.2	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	82.9	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	92.8	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	85.0	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	93.3	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	81.7	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	94.1	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	92.2	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	74.6	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1381617)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	86.0	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	96.3	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	86.2	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	81.6	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	95.6	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	95.3	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	78.1	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	73.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	82.8	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	98.6	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1381617)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	94.4	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	99.4	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	94.3	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	98.9	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	103	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	1.6 mg/kg	79.0	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	100	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	102	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	98.9	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	102	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	101	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	94.9	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	98.7	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	99.2	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	98.8	55	137
EP075I: Organochlorine Pesticides (QCLot: 1381617)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	99.3	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	94.0	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	98.8	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	100.0	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	104	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	99.4	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	100	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	99.0	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	98.9	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	99.6	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	86.9	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	103	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	105	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	102	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	101	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	103	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	103	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	103	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	100	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	102	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1381591)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	96.0	69	114

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1382755)							
EM1801471-001	NEL-BH128_0.5m	EG005T: Arsenic	7440-38-2	50 mg/kg	91.0	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.9	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	94.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	93.3	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	80.2	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	88.6	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	84.9	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	108	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1382756)							
EM1801471-001	NEL-BH128_0.5m	EG035T: Mercury	7439-97-6	5 mg/kg	76.8	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1381956)							
EM1801471-002	NEL-BH125_0.4m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	67.5	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1385526)							
EM1801471-002	NEL-BH125_0.4m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	92.7	77	113
EK040T: Fluoride Total (QCLot: 1382075)							
EM1801471-002	NEL-BH125_0.4m	EK040T: Fluoride	16984-48-8	400 mg/kg	98.2	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1381621)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1381621) - continued							
EM1801471-004	NEL-BH125_1.0m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	89.6	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1381591)							
EM1801471-002	NEL-BH125_0.4m	EP074-UT: Benzene	71-43-2	2 mg/kg	52.4	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	70.1	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1381591)							
EM1801471-002	NEL-BH125_0.4m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	26.1	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	58.9	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	89.2	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1381617)							
EM1801471-002	NEL-BH125_0.4m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	84.9	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	77.5	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	58.1	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1381617)							
EM1801471-002	NEL-BH125_0.4m	EP075-EM: Phenol	108-95-2	1 mg/kg	82.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	66.3	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1381617)							
EM1801471-002	NEL-BH125_0.4m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	88.2	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	99.8	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1381591)							
EM1801471-002	NEL-BH125_0.4m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	76.4	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1381620)							
EM1801471-003	NEL-BH125_0.75m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	100	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	97.8	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	97.1	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1381591)							
EM1801471-002	NEL-BH125_0.4m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	79.2	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1381620)							
EM1801471-003	NEL-BH125_0.75m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	96.8	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	99.2	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	94.8	44	126

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1801471	Page	: 1 of 10
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 18-Jan-2018
Site	: ----	Issue Date	: 25-Jan-2018
Sampler	: SCOTT HILLIARD	No. of samples received	: 9
Order number	: ----	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Control Samples (LCS)					
Hexavalent Chromium by Alkaline Digestion and DA Finish	1	19	5.26	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Plastic Bag (EA001) NEL-BH126_1.0m, NEL-BH126_1.5m	17-Jan-2018	23-Jan-2018	24-Jan-2018	✓	23-Jan-2018	23-Jan-2018	✓	
Soil Glass Jar - Unpreserved (EA001) NEL-BH128_0.5m	15-Jan-2018	22-Jan-2018	22-Jan-2018	✓	22-Jan-2018	22-Jan-2018	✓	
Soil Glass Jar - Unpreserved (EA001) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m, NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m	17-Jan-2018	23-Jan-2018	24-Jan-2018	✓	23-Jan-2018	23-Jan-2018	✓	
EA055: Moisture Content (Dried @ 105-110°C)								
Plastic Bag (EA055) NEL-BH126_1.0m, NEL-BH126_1.5m	17-Jan-2018	----	----	----	22-Jan-2018	31-Jan-2018	✓	
Soil Glass Jar - Unpreserved (EA055) NEL-BH128_0.5m	15-Jan-2018	----	----	----	22-Jan-2018	29-Jan-2018	✓	
Soil Glass Jar - Unpreserved (EA055) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m, NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m	17-Jan-2018	----	----	----	22-Jan-2018	31-Jan-2018	✓	
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag: Separate bag received (EA200) NEL-BH128_0.5m	15-Jan-2018	----	----	----	22-Jan-2018	14-Jul-2018	✓	
Snap Lock Bag: Separate bag received (EA200) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m, NEL-BH126_1.0m, NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m, NEL-BH126_1.5m	17-Jan-2018	----	----	----	22-Jan-2018	16-Jul-2018	✓	



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag: Separate bag received (EA200) NEL-BH128_0.5m		15-Jan-2018	----	----	----	22-Jan-2018	14-Jul-2018	✓
Snap Lock Bag: Separate bag received (EA200) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m, NEL-BH126_1.0m, NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m, NEL-BH126_1.5m		17-Jan-2018	----	----	----	22-Jan-2018	16-Jul-2018	✓
EG005T: Total Metals by ICP-AES								
Plastic Bag (EG005T) NEL-BH126_1.0m, NEL-BH126_1.5m		17-Jan-2018	23-Jan-2018	16-Jul-2018	✓	23-Jan-2018	16-Jul-2018	✓
Soil Glass Jar - Unpreserved (EG005T) NEL-BH128_0.5m		15-Jan-2018	23-Jan-2018	14-Jul-2018	✓	23-Jan-2018	14-Jul-2018	✓
Soil Glass Jar - Unpreserved (EG005T) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m, NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m		17-Jan-2018	23-Jan-2018	16-Jul-2018	✓	23-Jan-2018	16-Jul-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Plastic Bag (EG035T) NEL-BH126_1.0m, NEL-BH126_1.5m		17-Jan-2018	23-Jan-2018	14-Feb-2018	✓	24-Jan-2018	14-Feb-2018	✓
Soil Glass Jar - Unpreserved (EG035T) NEL-BH128_0.5m		15-Jan-2018	23-Jan-2018	12-Feb-2018	✓	24-Jan-2018	12-Feb-2018	✓
Soil Glass Jar - Unpreserved (EG035T) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m, NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m		17-Jan-2018	23-Jan-2018	14-Feb-2018	✓	24-Jan-2018	14-Feb-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Plastic Bag (EG048G) NEL-BH126_1.0m, NEL-BH126_1.5m		17-Jan-2018	22-Jan-2018	14-Feb-2018	✓	22-Jan-2018	29-Jan-2018	✓
Soil Glass Jar - Unpreserved (EG048G) NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	12-Feb-2018	✓	22-Jan-2018	29-Jan-2018	✓
Soil Glass Jar - Unpreserved (EG048G) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m, NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m		17-Jan-2018	22-Jan-2018	14-Feb-2018	✓	22-Jan-2018	29-Jan-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026SF: Total CN by Segmented Flow Analyser								
Plastic Bag (EK026SF)								
NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	23-Jan-2018	31-Jan-2018	✓	24-Jan-2018	06-Feb-2018	✓
Soil Glass Jar - Unpreserved (EK026SF)								
NEL-BH128_0.5m		15-Jan-2018	23-Jan-2018	29-Jan-2018	✓	24-Jan-2018	06-Feb-2018	✓
Soil Glass Jar - Unpreserved (EK026SF)								
NEL-BH125_0.4m,	NEL-BH125_0.75m,	17-Jan-2018	23-Jan-2018	31-Jan-2018	✓	24-Jan-2018	06-Feb-2018	✓
NEL-BH125_1.0m,	NEL-BH125_1.5m,							
NEL-BH126_0.3m,	NEL-BH126_0.7m							
EK040T: Fluoride Total								
Plastic Bag (EK040T)								
NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	22-Jan-2018	14-Feb-2018	✓	23-Jan-2018	14-Feb-2018	✓
Soil Glass Jar - Unpreserved (EK040T)								
NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	12-Feb-2018	✓	23-Jan-2018	12-Feb-2018	✓
Soil Glass Jar - Unpreserved (EK040T)								
NEL-BH125_0.4m,	NEL-BH125_0.75m,	17-Jan-2018	22-Jan-2018	14-Feb-2018	✓	23-Jan-2018	14-Feb-2018	✓
NEL-BH125_1.0m,	NEL-BH125_1.5m,							
NEL-BH126_0.3m,	NEL-BH126_0.7m							
EP066: Polychlorinated Biphenyls (PCB)								
Plastic Bag (EP066-EM)								
NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	22-Jan-2018	31-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP066-EM)								
NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	29-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP066-EM)								
NEL-BH125_0.4m,	NEL-BH125_0.75m,	17-Jan-2018	22-Jan-2018	31-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
NEL-BH125_1.0m,	NEL-BH125_1.5m,							
NEL-BH126_0.3m,	NEL-BH126_0.7m							
EP074A: Monocyclic Aromatic Hydrocarbons								
Plastic Bag (EP074-UT)								
NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	22-Jan-2018	24-Jan-2018	✓	22-Jan-2018	24-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	22-Jan-2018	✓	22-Jan-2018	22-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH125_0.4m,	NEL-BH125_0.75m,	17-Jan-2018	22-Jan-2018	24-Jan-2018	✓	22-Jan-2018	24-Jan-2018	✓
NEL-BH125_1.0m,	NEL-BH125_1.5m,							
NEL-BH126_0.3m,	NEL-BH126_0.7m							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene								
Plastic Bag (EP074-UT) NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	22-Jan-2018	24-Jan-2018	✓	22-Jan-2018	24-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	22-Jan-2018	✓	22-Jan-2018	22-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m,	NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m	17-Jan-2018	22-Jan-2018	24-Jan-2018	✓	22-Jan-2018	24-Jan-2018	✓
EP074I: Volatile Halogenated Compounds								
Plastic Bag (EP074-UT) NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	22-Jan-2018	24-Jan-2018	✓	22-Jan-2018	24-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	22-Jan-2018	✓	22-Jan-2018	22-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m,	NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m	17-Jan-2018	22-Jan-2018	24-Jan-2018	✓	22-Jan-2018	24-Jan-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Plastic Bag (EP075-EM) NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	22-Jan-2018	31-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	29-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m,	NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m	17-Jan-2018	22-Jan-2018	31-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Plastic Bag (EP075-EM) NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	22-Jan-2018	31-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	29-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m,	NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m	17-Jan-2018	22-Jan-2018	31-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075B: Polynuclear Aromatic Hydrocarbons								
Plastic Bag (EP075-EM) NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	22-Jan-2018	31-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	29-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m,	NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m	17-Jan-2018	22-Jan-2018	31-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
EP075I: Organochlorine Pesticides								
Plastic Bag (EP075-EM) NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	22-Jan-2018	31-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	29-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m,	NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m	17-Jan-2018	22-Jan-2018	31-Jan-2018	✓	22-Jan-2018	03-Mar-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Plastic Bag (EP074-UT) NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	22-Jan-2018	24-Jan-2018	✓	22-Jan-2018	24-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	22-Jan-2018	✓	22-Jan-2018	22-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m,	NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m	17-Jan-2018	22-Jan-2018	24-Jan-2018	✓	22-Jan-2018	24-Jan-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Plastic Bag (EP074-UT) NEL-BH126_1.0m,	NEL-BH126_1.5m	17-Jan-2018	22-Jan-2018	24-Jan-2018	✓	22-Jan-2018	24-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH128_0.5m		15-Jan-2018	22-Jan-2018	22-Jan-2018	✓	22-Jan-2018	22-Jan-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH125_0.4m, NEL-BH125_1.0m, NEL-BH126_0.3m,	NEL-BH125_0.75m, NEL-BH125_1.5m, NEL-BH126_0.7m	17-Jan-2018	22-Jan-2018	24-Jan-2018	✓	22-Jan-2018	24-Jan-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	3	22	13.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	19	5.26	10.00	✗	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

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 Work Order : EM1801471
 Client : GHD PTY LTD
 Project : 31350060803



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CERTIFICATE OF ANALYSIS

Work Order : **EM1801849**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **North East Link**
No. of samples received : **3**
No. of samples analysed : **3**

Page : 1 of 9
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 25-Jan-2018 13:00
Date Analysis Commenced : 30-Jan-2018
Issue Date : 02-Feb-2018 12:02



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- **EA200: As only one sample container was submitted for multiple tests (ALS ID: 003), at the client's request, sub sampling was conducted prior to Asbestos analysis. As this has the potential to understate detection, results should be scrutinised accordingly.**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL_BH125_3.0m	NEL_BH125_4.5m	NEL_BH100_2.0m	----	----
Client sampling date / time					23-Jan-2018 00:00	23-Jan-2018 00:00	23-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1801849-001	EM1801849-002	EM1801849-003	-----	-----
					Result	Result	Result	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.5	6.9	6.8	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		10.2	16.9	23.8	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	----	----
Asbestos Type	1332-21-4	-	--		-	-	-	----	----
Sample weight (dry)	----	0.01	g		83.5	104	38.6	----	----
APPROVED IDENTIFIER:	----	-	--		E.DAOS	E.DAOS	E.DAOS	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	7	6	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Copper	7440-50-8	5	mg/kg		11	8	16	----	----
Lead	7439-92-1	5	mg/kg		455	15	12	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg		16	19	26	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		7	<5	<5	----	----
Zinc	7440-66-6	5	mg/kg		65	41	15	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		230	270	340	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL_BH125_3.0m	NEL_BH125_4.5m	NEL_BH100_2.0m	----	----
Client sampling date / time					23-Jan-2018 00:00	23-Jan-2018 00:00	23-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1801849-001	EM1801849-002	EM1801849-003	-----	-----
					Result	Result	Result	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL_BH125_3.0m	NEL_BH125_4.5m	NEL_BH100_2.0m	----	----
Client sampling date / time				23-Jan-2018 00:00	23-Jan-2018 00:00	23-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1801849-001	EM1801849-002	EM1801849-003	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL_BH125_3.0m	NEL_BH125_4.5m	NEL_BH100_2.0m	----	----
Client sampling date / time				23-Jan-2018 00:00	23-Jan-2018 00:00	23-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1801849-001	EM1801849-002	EM1801849-003	-----	-----
				Result	Result	Result	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4.4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL_BH125_3.0m	NEL_BH125_4.5m	NEL_BH100_2.0m	----	----
Client sampling date / time					23-Jan-2018 00:00	23-Jan-2018 00:00	23-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1801849-001	EM1801849-002	EM1801849-003	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		93.9	81.2	71.4	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		95.4	89.8	98.0	----	----
Toluene-D8	2037-26-5	0.1	%		97.5	79.6	96.6	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		102	93.7	100	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		107	96.6	85.1	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		80.7	72.6	62.2	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		77.6	52.2	55.4	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		100.0	86.3	73.8	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		97.1	83.4	70.8	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		102	91.9	79.5	----	----
Anthracene-d10	1719-06-8	0.025	%		110	99.8	91.3	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		118	113	104	----	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	NEL_BH125_3.0m - 23-Jan-2018 00:00	Brown soil.
EA200: Description	NEL_BH125_4.5m - 23-Jan-2018 00:00	Brown soil.
EA200: Description	NEL_BH100_2.0m - 23-Jan-2018 00:00	Brown soil.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

GHD



Telephone: 613 8687 8000 Fax: 613 8687 8111

Quote # / GHD Reference

Page 1 of 1

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GHD



Melbourne Office Address
180 Lonsdale Street, Melbourne 3000
 Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

Quote # / GHD Reference

Page _____ of _____

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Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 11 January 2018 2:35 PM
To: Shirley LeCornu
Subject: RE: EM1801198 - GHD - 31/35006/0803

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Shirley,

There will be some more samples coming through so we'll hold off analysing at the moment, so they can be done in a batch.

The analysis will be VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Thanks,

David Quinn
Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
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Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

Please consider our environment before printing this email

From: Shirley LeCornu [<mailto:shirley.lecornu@alsglobal.com>]
Sent: Thursday, 11 January 2018 9:07 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1801198 - GHD - 31/35006/0803

Hi David

Can you please let me know analysis required for the samples we received yesterday. COC attached.

Thanks

Shirley

Shirley LeCornu
Client Services Officer – Springvale
Environmental



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We are keen for your feedback! [Please click here for your 1 question survey](#)

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**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1801849**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 31350060803	Page	: 1 of 2
Order number	: ----	Quote number	: EM2018GHDSE0003 (North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 25-Jan-2018 13:00	Issue Date	: 30-Jan-2018
Client Requested Due Date	: 02-Feb-2018	Scheduled Reporting Date	: 02-Feb-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C, 5.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 3 / 3

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **EA200: As only one sample container was submitted for multiple tests (ALS ID: 003), at the client's request, sub sampling was conducted prior to Asbestos analysis. As this has the potential to understate detection, results should be scrutinised accordingly.**

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Summary of Sample(s) and Requested Analysis

Matrix: **SOIL**

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

ALL ACCOUNTS

- Email ap-fss@ghd.com

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QUALITY CONTROL REPORT

Work Order	: EM1801849	Page	: 1 of 11
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 25-Jan-2018
Order number	: ----	Date Analysis Commenced	: 30-Jan-2018
C-O-C number	: ----	Issue Date	: 02-Feb-2018
Sampler	: ----		
Site	: ----		
Quote number	: North East Link		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1398466)									
EM1801849-001	NEL_BH125_3.0m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.5	6.5	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1398574)									
EM1801849-001	NEL_BH125_3.0m	EA055: Moisture Content	----	1	%	10.2	10.8	4.97	0% - 50%
EM1802053-001	Anonymous	EA055: Moisture Content	----	1	%	17.6	17.0	3.34	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1398618)									
EM1801849-001	NEL_BH125_3.0m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	16	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	11	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	455	417	8.66	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	7	7	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	65	51	24.2	0% - 50%
EM1802034-050	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	49	50	2.78	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	12	35.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	25	25	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	31	92.9	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit

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 Work Order : EM1801849
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1398618) - continued									
EM1802034-050	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	32	33	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1398617)									
EM1801849-001	NEL_BH125_3.0m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1802034-050	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.4	0.2	85.2	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1399186)									
EM1801849-001	NEL_BH125_3.0m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1801969-013	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1401793)									
EM1801849-001	NEL_BH125_3.0m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1801969-013	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1398566)									
EM1801849-001	NEL_BH125_3.0m	EK040T: Fluoride	16984-48-8	40	mg/kg	230	220	0.00	No Limit
EM1802063-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	130	130	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1398585)									
EM1801849-001	NEL_BH125_3.0m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1398477)									
EM1801849-001	NEL_BH125_3.0m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1398477)									
EM1801849-001	NEL_BH125_3.0m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1398477)									
EM1801849-001	NEL_BH125_3.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1398477) - continued									
EM1801849-001	NEL_BH125_3.0m	EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1398583)									
EM1801849-001	NEL_BH125_3.0m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1398583)									
EM1801849-001	NEL_BH125_3.0m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1398583)									
EM1801849-001	NEL_BH125_3.0m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrvsene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1398583) - continued									
EM1801849-001	NEL_BH125_3.0m	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1398583)									
EM1801849-001	NEL_BH125_3.0m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1398477)									
EM1801849-001	NEL_BH125_3.0m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1398584)									
EM1801849-001	NEL_BH125_3.0m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1398477)									
EM1801849-001	NEL_BH125_3.0m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1398584)									
EM1801849-001	NEL_BH125_3.0m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

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Work Order : EM1801849
Client : GHD PTY LTD
Project : 31350060803



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1398584) - continued									
EM1801849-001	NEL_BH125_3.0m	EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1398618)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	103	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	101	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	103	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.8	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	89.8	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	109	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	94.1	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	87.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	94.3	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	102	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1398617)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	97.0	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1399186)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	89.2	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1401793)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	90.6	80	110
EK040T: Fluoride Total (QCLot: 1398566)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	88.4	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1398585)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	85.1	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1398477)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	88.1	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	90.9	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	86.6	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	85.7	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	88.5	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	86.0	74	114
EP074H: Naphthalene (QCLot: 1398477)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	89.9	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1398477)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	98.6	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	77.5	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1398477) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	83.1	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	80.2	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	80.7	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	83.0	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	83.3	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	82.1	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	87.8	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	85.0	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	93.5	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	84.7	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	91.3	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	100	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	89.3	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	88.2	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	81.8	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	85.9	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	83.5	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1398583)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	96.5	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	91.1	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	95.1	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	100	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	100.0	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	92.9	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	89.4	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	90.9	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	89.4	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1398583)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	91.4	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	94.4	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	91.0	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	93.9	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	94.2	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	26.6	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	98.2	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	47.4	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	72.4	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	32.3	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1398583)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	97.0	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	101	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	97.6	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	99.1	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	98.4	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	99.6	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	100	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	105	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	107	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	111	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	109	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	108	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	103	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	104	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	103	55	137
EP075I: Organochlorine Pesticides (QCLot: 1398583)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	99.5	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	98.7	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	103	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	100	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	101	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	99.9	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	100	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	100	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	102	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	105	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	104	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	95.8	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	103	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	116	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	109	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	107	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	108	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	111	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	108	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	107	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1398477)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	83.5	69	114

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report

Laboratory Sample Information				Analytical Results Summary			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low High	
EG005T: Total Metals by ICP-AES (QCLot: 1398618)							
EM1801849-002	NEL_BH125_4.5m	EG005T: Arsenic	7440-38-2	50 mg/kg	98.3	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.2	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	96.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	96.6	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	96.2	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	103	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	74.4	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	101	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1398617)							
EM1801849-002	NEL_BH125_4.5m	EG035T: Mercury	7439-97-6	5 mg/kg	83.8	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1399186)							
EM1801849-002	NEL_BH125_4.5m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	68.3	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1401793)							
EM1801849-002	NEL_BH125_4.5m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	87.5	77	113
EK040T: Fluoride Total (QCLot: 1398566)							
EM1801849-002	NEL_BH125_4.5m	EK040T: Fluoride	16984-48-8	400 mg/kg	102	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1398585)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1398585) - continued							
EM1802059-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	88.4	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1398477)							
EM1801849-002	NEL_BH125_4.5m	EP074-UT: Benzene	71-43-2	2 mg/kg	87.6	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	84.0	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1398477)							
EM1801849-002	NEL_BH125_4.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	79.3	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	75.5	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	85.2	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1398583)							
EM1801849-002	NEL_BH125_4.5m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	78.6	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	66.6	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	16.1	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1398583)							
EM1801849-002	NEL_BH125_4.5m	EP075-EM: Phenol	108-95-2	1 mg/kg	71.1	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	54.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1398583)							
EM1801849-002	NEL_BH125_4.5m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	74.1	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	85.7	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1398477)							
EM1801849-002	NEL_BH125_4.5m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	74.1	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1398584)							
EM1801849-003	NEL_BH100_2.0m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	96.6	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	101	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	97.1	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1398477)							
EM1801849-002	NEL_BH125_4.5m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	69.1	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1398584)							
EM1801849-003	NEL_BH100_2.0m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	96.8	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	99.2	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	91.3	44	126

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1801849	Page	: 1 of 8
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 25-Jan-2018
Site	: ----	Issue Date	: 02-Feb-2018
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Control Samples (LCS)					
Hexavalent Chromium by Alkaline Digestion and DA Finish	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) NEL_BH125_3.0m, NEL_BH100_2.0m NEL_BH125_4.5m,	23-Jan-2018	30-Jan-2018	30-Jan-2018	✓	30-Jan-2018	30-Jan-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) NEL_BH125_3.0m, NEL_BH100_2.0m NEL_BH125_4.5m,	23-Jan-2018	----	----	----	30-Jan-2018	06-Feb-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag - Subsampled by ALS (EA200) NEL_BH100_2.0m	23-Jan-2018	----	----	----	31-Jan-2018	22-Jul-2018	✓
Snap Lock Bag: Separate bag received (EA200) NEL_BH125_3.0m, NEL_BH125_4.5m	23-Jan-2018	----	----	----	31-Jan-2018	22-Jul-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - Subsampled by ALS (EA200) NEL_BH100_2.0m	23-Jan-2018	----	----	----	31-Jan-2018	22-Jul-2018	✓
Snap Lock Bag: Separate bag received (EA200) NEL_BH125_3.0m, NEL_BH125_4.5m	23-Jan-2018	----	----	----	31-Jan-2018	22-Jul-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) NEL_BH125_3.0m, NEL_BH100_2.0m NEL_BH125_4.5m,	23-Jan-2018	31-Jan-2018	22-Jul-2018	✓	01-Feb-2018	22-Jul-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) NEL_BH125_3.0m, NEL_BH100_2.0m NEL_BH125_4.5m,	23-Jan-2018	31-Jan-2018	20-Feb-2018	✓	01-Feb-2018	20-Feb-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m,	23-Jan-2018	31-Jan-2018	20-Feb-2018	✓	31-Jan-2018	07-Feb-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m,	23-Jan-2018	31-Jan-2018	06-Feb-2018	✓	01-Feb-2018	14-Feb-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m,	23-Jan-2018	30-Jan-2018	20-Feb-2018	✓	31-Jan-2018	20-Feb-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m,	23-Jan-2018	30-Jan-2018	06-Feb-2018	✓	30-Jan-2018	11-Mar-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m,	23-Jan-2018	30-Jan-2018	30-Jan-2018	✓	30-Jan-2018	30-Jan-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m,	23-Jan-2018	30-Jan-2018	30-Jan-2018	✓	30-Jan-2018	30-Jan-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m,	23-Jan-2018	30-Jan-2018	30-Jan-2018	✓	30-Jan-2018	30-Jan-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m,	23-Jan-2018	30-Jan-2018	06-Feb-2018	✓	30-Jan-2018	11-Mar-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m,	23-Jan-2018	30-Jan-2018	06-Feb-2018	✓	30-Jan-2018	11-Mar-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m,	23-Jan-2018	30-Jan-2018	06-Feb-2018	✓	30-Jan-2018	11-Mar-2018	✓

Page : 4 of 8
 Work Order : EM1801849
 Client : GHD PTY LTD
 Project : 31350060803



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m, 23-Jan-2018	30-Jan-2018	06-Feb-2018	✔	30-Jan-2018	11-Mar-2018	✔
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m, 23-Jan-2018	30-Jan-2018	30-Jan-2018	✔	30-Jan-2018	30-Jan-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT) NEL_BH125_3.0m, NEL_BH100_2.0m	NEL_BH125_4.5m, 23-Jan-2018	30-Jan-2018	30-Jan-2018	✔	30-Jan-2018	30-Jan-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

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 Work Order : EM1801849
 Client : GHD PTY LTD
 Project : 31350060803



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CERTIFICATE OF ANALYSIS

Work Order : **EM1802245**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **SCOTT HILLIARD**
Site : **----**
Quote number : **EN/005/17**
No. of samples received : **13**
No. of samples analysed : **13**

Page : 1 of 19
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 31-Jan-2018 16:45
Date Analysis Commenced : 01-Feb-2018
Issue Date : 09-Feb-2018 08:29



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Sample 009 - 013 received on 1/2/18 @ 13:25 with temp 5.3°C
- pH analysis is done under non-stirring condition.
- **EA200: As only one sample container was submitted for multiple tests[EM1802245-009 010 011 012 013], at the client's request, sub sampling was conducted prior to Asbestos analysis.**
As this has the potential to understate detection, results should be scrutinised accordingly.
- EG005t: EM1802245 #8 , sample has been diluted prior to analysis and LOR has been raised Cadmium.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH127_0.25m	NEL-BH127_0.6m	NEL-BH127_1.05m	NEL-BH127_1.50m	NEL-BH128A_0.23m
Client sampling date / time					30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1802245-001	EM1802245-002	EM1802245-003	EM1802245-004	EM1802245-005
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.9	7.3	6.5	6.5	6.9
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		14.7	17.5	17.1	16.8	15.4
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Sample weight (dry)	----	0.01	g		10.6	21.8	27.5	12.6	24.1
APPROVED IDENTIFIER:	----	-	--		E.DAOS	E.DAOS	E.DAOS	E.DAOS	E.DAOS
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		7	8	8	7	12
Lead	7439-92-1	5	mg/kg		10	11	9	11	23
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		16	14	14	13	14
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		11	13	24	25	66
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		290	200	230	240	290
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH127_0.25m	NEL-BH127_0.6m	NEL-BH127_1.05m	NEL-BH127_1.50m	NEL-BH128A_0.23m
Client sampling date / time					30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1802245-001	EM1802245-002	EM1802245-003	EM1802245-004	EM1802245-005
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH127_0.25m	NEL-BH127_0.6m	NEL-BH127_1.05m	NEL-BH127_1.50m	NEL-BH128A_0.23m
Client sampling date / time				30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00
Compound	CAS Number	LOR	Unit	EM1802245-001	EM1802245-002	EM1802245-003	EM1802245-004	EM1802245-005
				Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH127_0.25m	NEL-BH127_0.6m	NEL-BH127_1.05m	NEL-BH127_1.50m	NEL-BH128A_0.23m
Client sampling date / time				30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00
Compound	CAS Number	LOR	Unit	EM1802245-001	EM1802245-002	EM1802245-003	EM1802245-004	EM1802245-005
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH127_0.25m	NEL-BH127_0.6m	NEL-BH127_1.05m	NEL-BH127_1.50m	NEL-BH128A_0.23m
Client sampling date / time					30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1802245-001	EM1802245-002	EM1802245-003	EM1802245-004	EM1802245-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		88.3	97.8	92.2	95.6	94.1
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		77.6	84.1	75.3	81.7	79.8
Toluene-D8	2037-26-5	0.1	%		70.5	76.2	67.2	77.8	74.6
4-Bromofluorobenzene	460-00-4	0.1	%		71.3	82.6	76.7	76.4	82.4
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		95.9	86.6	91.1	99.1	98.5
2-Chlorophenol-D4	93951-73-6	0.025	%		78.6	82.0	74.0	75.7	79.4
2,4,6-Tribromophenol	118-79-6	0.025	%		86.9	77.6	85.8	96.0	96.3
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		104	97.0	94.8	97.0	102
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		91.3	97.1	77.5	76.7	83.4
2-Fluorobiphenyl	321-60-8	0.025	%		99.3	109	96.0	100	97.8
Anthracene-d10	1719-06-8	0.025	%		121	102	118	130	120
4-Terphenyl-d14	1718-51-0	0.025	%		122	126	137	130	134



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH128A_0.45m	NEL-BH128A_0.9m	NEL-BH128A_1.2m	NEL-BH126_2.0	NEL-BH126_3.0
Client sampling date / time					30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	31-Jan-2018 00:00	31-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1802245-006	EM1802245-007	EM1802245-008	EM1802245-009	EM1802245-010
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.9	6.6	6.9	7.0	7.3
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		16.6	19.1	22.4	13.7	12.4
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Sample weight (dry)	----	0.01	g		21.6	29.3	29.8	43.6	44.0
APPROVED IDENTIFIER:	----	-	--		E.DAOS	E.DAOS	E.DAOS	E.DAOS	E.DAOS
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	7	6	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<2	<1	<1
Copper	7440-50-8	5	mg/kg		12	15	40	13	8
Lead	7439-92-1	5	mg/kg		19	18	123	11	9
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		19	26	27	15	13
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	6	<5	<5
Zinc	7440-66-6	5	mg/kg		51	41	2820	24	27
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		610	380	300	310	220
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH128A_0.45m	NEL-BH128A_0.9m	NEL-BH128A_1.2m	NEL-BH126_2.0	NEL-BH126_3.0
Client sampling date / time					30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	31-Jan-2018 00:00	31-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1802245-006	EM1802245-007	EM1802245-008	EM1802245-009	EM1802245-010
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH128A_0.45m	NEL-BH128A_0.9m	NEL-BH128A_1.2m	NEL-BH126_2.0	NEL-BH126_3.0
Client sampling date / time					30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	31-Jan-2018 00:00	31-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1802245-006	EM1802245-007	EM1802245-008	EM1802245-009	EM1802245-010
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg		<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH128A_0.45m	NEL-BH128A_0.9m	NEL-BH128A_1.2m	NEL-BH126_2.0	NEL-BH126_3.0
Client sampling date / time					30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	31-Jan-2018 00:00	31-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1802245-006	EM1802245-007	EM1802245-008	EM1802245-009	EM1802245-010
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4.4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4.4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	0.60	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4.4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	0.60	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	0.60	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH128A_0.45m	NEL-BH128A_0.9m	NEL-BH128A_1.2m	NEL-BH126_2.0	NEL-BH126_3.0
Client sampling date / time					30-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	31-Jan-2018 00:00	31-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1802245-006	EM1802245-007	EM1802245-008	EM1802245-009	EM1802245-010
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	120	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	120	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	160	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	160	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		88.4	93.8	90.9	97.4	93.0
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		78.0	72.2	69.2	82.8	87.2
Toluene-D8	2037-26-5	0.1	%		74.5	63.5	65.1	74.5	76.9
4-Bromofluorobenzene	460-00-4	0.1	%		81.8	73.9	72.7	79.7	85.2
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		94.9	102	87.9	111	106
2-Chlorophenol-D4	93951-73-6	0.025	%		76.6	80.7	88.6	86.4	77.4
2,4,6-Tribromophenol	118-79-6	0.025	%		89.6	95.9	82.4	88.9	80.0
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		97.9	107	93.1	90.8	80.7
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		82.5	88.9	88.0	98.8	83.4
2-Fluorobiphenyl	321-60-8	0.025	%		91.0	98.3	100	111	97.5
Anthracene-d10	1719-06-8	0.025	%		116	123	117	116	110
4-Terphenyl-d14	1718-51-0	0.025	%		136	130	128	128	109



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH127_2.0m	NEL-BH127_2.5m	NEL-BH127_3.0m	----	----
Client sampling date / time					31-Jan-2018 00:00	31-Jan-2018 00:00	31-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1802245-011	EM1802245-012	EM1802245-013	-----	-----
					Result	Result	Result	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.5	6.6	6.7	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		9.9	12.0	9.3	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	----	----
Asbestos Type	1332-21-4	-	--		-	-	-	----	----
Sample weight (dry)	----	0.01	g		45.4	45.4	46.2	----	----
APPROVED IDENTIFIER:	----	-	--		E.DAOS	E.DAOS	E.DAOS	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Copper	7440-50-8	5	mg/kg		14	10	12	----	----
Lead	7439-92-1	5	mg/kg		9	9	8	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg		20	16	16	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	----	----
Zinc	7440-66-6	5	mg/kg		39	38	37	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		240	240	230	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH127_2.0m	NEL-BH127_2.5m	NEL-BH127_3.0m	----	----
Client sampling date / time					31-Jan-2018 00:00	31-Jan-2018 00:00	31-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1802245-011	EM1802245-012	EM1802245-013	-----	-----
					Result	Result	Result	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH127_2.0m	NEL-BH127_2.5m	NEL-BH127_3.0m	----	----
Client sampling date / time					31-Jan-2018 00:00	31-Jan-2018 00:00	31-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1802245-011	EM1802245-012	EM1802245-013	-----	-----
					Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	<5	----	----
Dinoseb	88-85-7	5	mg/kg		<5	<5	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH127_2.0m	NEL-BH127_2.5m	NEL-BH127_3.0m	----	----
Client sampling date / time				31-Jan-2018 00:00	31-Jan-2018 00:00	31-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1802245-011	EM1802245-012	EM1802245-013	-----	-----
				Result	Result	Result	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH127_2.0m	NEL-BH127_2.5m	NEL-BH127_3.0m	----	----
Client sampling date / time					31-Jan-2018 00:00	31-Jan-2018 00:00	31-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1802245-011	EM1802245-012	EM1802245-013	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		87.7	84.5	83.1	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		78.1	87.7	82.1	----	----
Toluene-D8	2037-26-5	0.1	%		70.9	79.2	73.7	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		79.6	86.7	73.1	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		91.4	94.2	96.1	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		67.1	65.1	70.3	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		74.2	62.2	82.0	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		72.2	71.9	73.7	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		79.0	65.3	65.1	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		114	72.5	72.2	----	----
Anthracene-d10	1719-06-8	0.025	%		102	87.0	95.8	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		116	96.9	127	----	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	NEL-BH127_0.25m - 30-Jan-2018 00:00	Brown soil.
EA200: Description	NEL-BH127_0.6m - 30-Jan-2018 00:00	Brown soil with rock matter.
EA200: Description	NEL-BH127_1.05m - 30-Jan-2018 00:00	Brown soil with organic fibres.
EA200: Description	NEL-BH127_1.50m - 30-Jan-2018 00:00	Brown soil with organic fibres.
EA200: Description	NEL-BH128A_0.23m - 30-Jan-2018 00:00	Brown soil.
EA200: Description	NEL-BH128A_0.45m - 30-Jan-2018 00:00	Brown soil with rock matter.
EA200: Description	NEL-BH128A_0.9m - 30-Jan-2018 00:00	Brown soil with rock matter.
EA200: Description	NEL-BH128A_1.2m - 30-Jan-2018 00:00	Brown soil with organic matter.
EA200: Description	NEL-BH126_2.0 - 31-Jan-2018 00:00	Brown soil.
EA200: Description	NEL-BH126_3.0 - 31-Jan-2018 00:00	Brown orange soil.
EA200: Description	NEL-BH127_2.0m - 31-Jan-2018 00:00	Brown soil.
EA200: Description	NEL-BH127_2.5m - 31-Jan-2018 00:00	Brown soil.
EA200: Description	NEL-BH127_3.0m - 31-Jan-2018 00:00	Brown soil.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

CHAIN OF CUSTODY RECORD

Page 1 of 1

GHD



Melbourne Office Address

180 Lonsdale Street, Melbourne 3000

Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

Quote # / GHD Reference

ASAP

Job Number
31/35006/0803

GHD Contact

Laboratory:

ALS SPRINGVALE

Address:

Project

North East Link

Laboratory Contact: SHIRLEY LECORNU

GHD Project Manager

GHD Contact

David Quinn

GHD PM email

GHD Contact email

David.Quinn@ghd.com

Sample I.D.	Date	Time	Composite Sample	Sample Mark S: Soil S: Sludge W: Water A: Air GW: Groundwater	J: Soil Jar B: Bag V: 100 ml G: glass bottle P: plastic bottle	Number	Volume (mL)	HOLD
NEL-BH127-0.25m	30/01	AM	/	S	J	1	250	X
" - 0.25m	"	"	/	S	B	2	1	X
" - 0.6m	"	"	/	S	J	3	250	X
" - 0.6m	"	"	/	S	B	4	1	X
" - 1.05m	"	"	/	S	J	5	250	X
" - 1.05m	"	"	/	S	B	6	1	X
" - 1.50m	"	"	/	S	J	7	250	X
" - 1.50m	"	"	/	S	B	8	1	X
NEL-BH128A-0.23m	"	"	/	S	J	9	250	X
" - 0.23m	"	"	/	S	B	10	1	X
" - 0.45m	"	"	/	S	J	11	250	X
" - 0.45m	"	"	/	S	B	12	1	X
" - 0.9m	"	"	/	S	J	13	250	X
" - 0.9m	"	"	/	S	B	14	1	X
" - 1.2m	"	"	/	S	J	15	250	X
" - 1.2m	"	"	/	S	B	16	1	X

TOTAL NUMBER OF SAMPLES:

GENERAL COMMENTS:

TOTAL NUMBER OF BSKIES:

SAMPLES/ESKY CHILLED? Y/N

CUSTODY DETAILS:

	Name	Date/Time Received	Date/Time Relinquished
SAMPLER	Scott Hillford (SH)	Am 30/01/18	Am 31/01/18
GHD SERVICE CENTRE	N. Francis	31/1/18 2:00	31-1-18 3pm
COURIER	ARIEL	31/1/18 3:00	
LABORATORY	Arnell (Am)	31/1/18 16:45	

COURIER AND LABORATORY INSTRUCTIONS:

Sign white copy on receipt and release of samples.

Samples are to be delivered to the Laboratory Address.

On receipt of samples, the laboratory contact

to sign white copy and fax/email to GHD Contact.

On completion of analyses please return white

copy with results.

Pink copy is returned to the sampler once the

courier has signed for the samples.

E-mail results to the GHD Project Manager

and GHD Contact with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

CC to: mark-s.davidson@aecon.com

Nazuhah.Rosli@aecon.com

SAMPLE COMMENTS

Environmental Division
Melbourne

Work Order Reference

EM1802245



Telephone: + 61-3-8549 9600

GHD



180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Fax: 613 8687 8111

Quote # / GHD Reference

Page 1 of 1

Job Number
31/35006/0803

GHD Contact

Laboratory: ALS SPRINGVALE

Address:

Project North East Link (NEL)

Laboratory Contact: SHIPLEY LECORNU.

GHD Project Manager	GHD Contact
David	Quinn@ghd.com

GHD Contact	
-------------	--

GHD PM email	GHD Contact email
--------------	-------------------

GHD Contact email	
-------------------	--

[illegible]

Results to be provided in ESDAT compatible format

SAMPLE COMMENTS

CC to: Mark S. Davidson @ aecom.com
Nagha. Joshi @ aecom.com.

TOTAL NUMBER OF SAMPLES

GENERAL COMMENTS

TOTAL NUMBER OF ESKIES:

SAMPLES/ESKY CHILLED? Y/N

CUSTODY DETAILS

Name _____

Date/Time Received

Date/Time Relinquished

SAMPLER

LIAM SPURR / ANURAG SOSTI

Am 31/01/18

PM 31/01/28

GHD SERVICE CENTRE

WILSON	SCOTT HILLARD
-------------------	---------------

pm 3/10/18

12.00 pm 01/02/18

COURIER

~~name~~ (last)

1/2 13.25

LABORATORY

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 11 January 2018 2:35 PM
To: Shirley LeCornu
Subject: RE: EM1801198 - GHD - 31/35006/0803

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Shirley,

There will be some more samples coming through so we'll hold off analysing at the moment, so they can be done in a batch.

The analysis will be VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Thanks,

David Quinn

Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

Voted Australia's no.1 Waste Consultant in 2012, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

Please consider our environment before printing this email

From: Shirley LeCornu [<mailto:shirley.lecornu@alsglobal.com>]
Sent: Thursday, 11 January 2018 9:07 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1801198 - GHD - 31/35006/0803

Hi David

Can you please let me know analysis required for the samples we received yesterday. COC attached.

Thanks

Shirley

Shirley LeCornu

Client Services Officer – Springvale
Environmental



T +61 3 8549 9600 **D** +61 3 8549 9630

F +61 3 8549 9626

Shirley.lecornu@alsglobal.com

2-4 Westall Rd

Springvale Vic 3171

Australia

We are keen for your feedback! [Please click here for your 1 question survey](#)

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**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1802245**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 31350060803	Page	: 1 of 3
Order number	: ----	Quote number	: EB2017GHDSE0022 (EN/005/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: SCOTT HILLIARD		

Dates

Date Samples Received	: 31-Jan-2018 16:45	Issue Date	: 01-Feb-2018
Client Requested Due Date	: 07-Feb-2018	Scheduled Reporting Date	: 07-Feb-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 3.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 8 / 8

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Asbestos Identification in Soils : EA200		
NEL-BH127_0.25m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH127_0.6m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH127_1.05m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH127_1.50m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200 Asbestos Identification in Soils -	SOIL - P-16 WRG 621
EM1802245-001	30-Jan-2018 00:00	NEL-BH127_0.25m	✓	✓	✓
EM1802245-002	30-Jan-2018 00:00	NEL-BH127_0.6m	✓	✓	✓
EM1802245-003	30-Jan-2018 00:00	NEL-BH127_1.05m	✓	✓	✓
EM1802245-004	30-Jan-2018 00:00	NEL-BH127_1.50m	✓	✓	✓
EM1802245-005	30-Jan-2018 00:00	NEL-BH128A_0.23m	✓	✓	✓
EM1802245-006	30-Jan-2018 00:00	NEL-BH128A_0.45m	✓	✓	✓
EM1802245-007	30-Jan-2018 00:00	NEL-BH128A_0.9m	✓	✓	✓
EM1802245-008	30-Jan-2018 00:00	NEL-BH128A_1.2m	✓	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

QUALITY CONTROL REPORT

Work Order	: EM1802245	Page	: 1 of 21
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 31-Jan-2018
Order number	: ----	Date Analysis Commenced	: 01-Feb-2018
C-O-C number	: ----	Issue Date	: 09-Feb-2018
Sampler	: SCOTT HILLIARD		
Site	: ----		
Quote number	: EN/005/17		
No. of samples received	: 13		
No. of samples analysed	: 13		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1408093)									
EM1802243-046	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.1	7.0	1.42	0% - 20%
EM1802245-007	NEL-BH128A_0.9m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.6	6.6	0.00	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1411920)									
EM1802245-009	NEL-BH126_2.0	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.0	7.0	0.00	0% - 20%
EM1802312-006	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.5	8.5	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1407442)									
EB1802958-001	Anonymous	EA055: Moisture Content	----	1	%	38.2	37.5	1.73	0% - 20%
EM1802245-003	NEL-BH127_1.05m	EA055: Moisture Content	----	1	%	17.1	19.0	10.4	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1407443)									
EM1802245-013	NEL-BH127_3.0m	EA055: Moisture Content	----	1	%	9.3	9.9	5.80	No Limit
EM1802300-001	Anonymous	EA055: Moisture Content	----	1	%	20.8	17.7	16.1	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1410505)									
EM1802245-001	NEL-BH127_0.25m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	20	22.9	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	10	30.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	14	37.8	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	11	16	36.6	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
EM1802245-010	NEL-BH126_3.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1410505) - continued									
EM1802245-010	NEL-BH126_3.0	EG005T: Nickel	7440-02-0	2	mg/kg	13	12	8.42	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	9	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	8	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	27	24	11.4	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1410506)									
EM1802245-001	NEL-BH127_0.25m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1802245-010	NEL-BH126_3.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1411918)									
EM1802245-001	NEL-BH127_0.25m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1802245-010	NEL-BH126_3.0	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1407630)									
EM1802230-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1802243-019	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1407631)									
EM1802245-004	NEL-BH127_1.50m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1802245-013	NEL-BH127_3.0m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1407168)									
EM1802237-012	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	280	280	0.00	No Limit
EM1802243-041	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	200	200	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1407169)									
EM1802245-008	NEL-BH128A_1.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	300	310	0.00	No Limit
EM1802282-004	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	240	250	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1407091)									
EM1802239-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1802243-053	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1410379)									
EM1802245-009	NEL-BH126_2.0	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1802330-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.2	<0.2	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1405259)									
EM1802243-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1405259) - continued									
EM1802243-001	Anonymous	EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1802243-061	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		106-42-3							
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1407269)									
EM1802245-009	NEL-BH126_2.0	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		106-42-3							
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EP074H: Naphthalene (QC Lot: 1405259)									
EM1802243-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1802243-061	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1407269)									
EM1802245-009	NEL-BH126_2.0	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1405259)									
EM1802243-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
			EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1405259) - continued									
EM1802243-001	Anonymous	EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1802243-061	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP074I: Volatile Halogenated Compounds (QC Lot: 1407269)							
EM1802245-009	NEL-BH126_2.0	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1407269) - continued									
EM1802245-009	NEL-BH126_2.0	EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1407088)									
EM1802239-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		0-2							
EM1802243-053	Anonymous	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1802245-009	NEL-BH126_2.0	0-2							
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1802330-001	Anonymous	EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		0-2							
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
EM1802330-001	Anonymous	EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.07	<0.07	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1410380) - continued									
EM1802330-001	Anonymous	EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.14	<0.14	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1407088)									
EM1802239-003	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1802243-053	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1410380)		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
EM1802245-009	NEL-BH126_2.0	EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
EM1802330-001	Anonymous	EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1410380) - continued									
EM1802330-001	Anonymous	EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<6	<6	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1407088)									
EM1802239-003	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1802243-053	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	0.6	0.5	18.9	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	1.8	1.4	22.6	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	4.2	3.6	17.1	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	2.2	1.8	18.9	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	2.2	1.8	18.6	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	3.8	3.0	25.0	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	3.1	2.4	25.9	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	1.4	1.1	25.4	No Limit
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	0.6	<0.5	26.5	No Limit		
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	2.4	1.9	25.7	No Limit		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1410380)									
EM1802245-009	NEL-BH126_2.0	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1410380) - continued									
EM1802245-009	NEL-BH126_2.0	EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EM1802330-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5
EP075-EM: Acenaphthene	83-32-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Acenaphthylene	208-96-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Fluorene	86-73-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Phenanthrene	85-01-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Anthracene	120-12-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Fluoranthene	206-44-0			0.5	mg/kg	0.6	<0.5	27.4	No Limit
EP075-EM: Pyrene	129-00-0			0.5	mg/kg	0.7	<0.5	37.6	No Limit
EP075-EM: Benz(a)anthracene	56-55-3			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Chrysene	218-01-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9			0.5	mg/kg	0.9	0.5	59.8	No Limit
EP075-EM: Benzo(a)pyrene	50-32-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(g.h.i)perylene	191-24-2			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1407088)									
EM1802239-003	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1407088) - continued									
EM1802239-003	Anonymous	EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	0.10	0.10	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1802243-053	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1410380)									
EM1802245-009	NEL-BH126_2.0	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1410380) - continued									
EM1802245-009	NEL-BH126_2.0	EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1802330-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1405259)									
EM1802243-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1802243-061	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1407090)									
EM1802239-003	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

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 Work Order : EM1802245
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1407090) - continued									
EM1802243-053	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	170	160	9.51	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	170	160	7.16	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1407269)									
EM1802245-009	NEL-BH126_2.0	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1410381)									
EM1802245-009	NEL-BH126_2.0	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1802330-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	110	12.2	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	160	200	23.4	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1405259)									
EM1802243-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1802243-061	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1407090)									
EM1802239-003	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1802243-053	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	300	270	8.54	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1407269)									
EM1802245-009	NEL-BH126_2.0	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1410381)									
EM1802245-009	NEL-BH126_2.0	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1802330-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	190	240	23.8	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	120	170	29.7	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1410505)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	79.8	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	106	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	85.8	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	94.7	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	102	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	108	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	100	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	94.8	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	103	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.4	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1410506)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	95.7	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1411918)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	92.0	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1407630)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	85.5	80	110
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1407631)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	89.9	80	110
EK040T: Fluoride Total (QCLot: 1407168)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	99.5	77	106
EK040T: Fluoride Total (QCLot: 1407169)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	100	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1407091)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	105	63	118
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1410379)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	100	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1405259)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	91.8	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	93.1	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	93.7	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	93.1	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	93.9	76	116



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1405259) - continued								
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	91.6	74	114
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1407269)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	96.2	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	96.4	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	96.3	71	122
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	95.1	70	118
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	94.2	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	92.6	74	114
EP074H: Naphthalene (QCLot: 1405259)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	95.1	77	111
EP074H: Naphthalene (QCLot: 1407269)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	93.0	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1405259)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	101	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	97.3	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	97.6	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	97.4	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	94.0	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	95.8	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	96.1	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	95.0	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	101	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	91.9	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	97.5	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	95.0	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	95.4	70	119
EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	92.4	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	90.5	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.3	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	92.4	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	91.5	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	92.8	59	124
EP074I: Volatile Halogenated Compounds (QCLot: 1407269)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	96.1	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	104	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	95.8	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	101	68	124



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1407088) - continued								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	87.8	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	98.2	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	91.3	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	88.2	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	114	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	45.8	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	71.7	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	68.9	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	84.5	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	99.0	12	132
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1410380)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	88.8	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	107	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	93.7	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	104	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	119	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	115	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	111	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	105	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	119	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	95.4	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1407088)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	96.7	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	99.8	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	104	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	100	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	103	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	69.3	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	101	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	104	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	100	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	102	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	99.3	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	98.4	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	96.0	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	97.3	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	99.5	55	137



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1410380)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	111	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	113	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	116	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	114	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	116	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	77.4	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	108	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	94.9	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	92.1	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	94.2	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	130	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	128	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	106	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	104	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	103	55	137
EP075I: Organochlorine Pesticides (QCLot: 1407088)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	101	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	98.7	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	101	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	103	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	104	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	102	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	102	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	102	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	101	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	101	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	105	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	100	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	104	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	103	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	109	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	104	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	102	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	103	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	103	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	105	61	136
EP075I: Organochlorine Pesticides (QCLot: 1410380)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	112	68	122



Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP075I: Organochlorine Pesticides (QCLot: 1410380) - continued								
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	109	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	109	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	111	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	116	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	111	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	111	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	108	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	107	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	101	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	92.2	63	136
EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	97.2	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	93.6	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	80.4	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	96.4	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	98.0	66	135
EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	95.0	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	95.0	63	139
EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	93.3	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	92.8	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1405259)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	71.8	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1407090)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	108	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	112	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	109	77	116
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1407269)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	73.0	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1410381)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	107	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	112	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	112	77	116
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1405259)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	71.0	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1407090)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	108	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	110	79	113



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1407090) - continued								
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	110	68	124
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1407269)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	72.0	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE	10	mg/kg	<10	----	----	----	----
	X							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1410381)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	111	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	112	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	114	68	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1410505)							
EM1802245-002	NEL-BH127_0.6m	EG005T: Arsenic	7440-38-2	50 mg/kg	93.0	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	94.5	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	95.7	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	96.9	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	96.9	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	86.5	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	93.6	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1410506)							
EM1802245-002	NEL-BH127_0.6m	EG035T: Mercury	7439-97-6	5 mg/kg	100	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1411918)							
EM1802245-002	NEL-BH127_0.6m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	79.4	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1407630)							
EM1802230-010	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	86.7	77	113
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1407631)							
EM1802245-005	NEL-BH128A_0.23m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	90.4	77	113
EK040T: Fluoride Total (QCLot: 1407168)							
EM1802239-003	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	100	70	130



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK040T: Fluoride Total (QCLot: 1407169)							
EM1802245-009	NEL-BH126_2.0	EK040T: Fluoride	16984-48-8	400 mg/kg	103	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1407091)							
EM1802243-013	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	97.0	36	152
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1410379)							
EM1802245-010	NEL-BH126_3.0	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	94.1	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1405259)							
EM1802243-007	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	89.9	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	89.2	56	134
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1407269)							
EM1802245-010	NEL-BH126_3.0	EP074-UT: Benzene	71-43-2	2 mg/kg	67.1	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	67.2	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1405259)							
EM1802243-007	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	93.8	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	85.6	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	88.2	28	134
EP074I: Volatile Halogenated Compounds (QCLot: 1407269)							
EM1802245-010	NEL-BH126_3.0	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	63.5	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	63.2	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	69.5	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1407088)							
EM1802243-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	113	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	104	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	49.4	10	144
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1410380)							
EM1802245-011	NEL-BH127_2.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	110	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	87.8	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	34.1	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1407088)							
EM1802243-001	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	104	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	85.4	13	129
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1410380)							
EM1802245-011	NEL-BH127_2.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	93.3	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	83.6	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1407088)							
EM1802243-001	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	118	46	138



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1407088) - continued							
EM1802243-001	Anonymous	EP075-EM: Pyrene	129-00-0	1 mg/kg	# Not Determined	27	169
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1410380)							
EM1802245-011	NEL-BH127_2.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	96.2	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	104	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1405259)							
EM1802243-007	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	71.5	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1407090)							
EM1802243-007	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	100	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	105	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	103	64	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1407269)							
EM1802245-010	NEL-BH126_3.0	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	55.5	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1410381)							
EM1802245-012	NEL-BH127_2.5m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	105	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	110	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	109	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1405259)							
EM1802243-007	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	69.2	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1407090)							
EM1802243-007	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	101	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	104	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	104	44	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1407269)							
EM1802245-010	NEL-BH126_3.0	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	53.7	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1410381)							
EM1802245-012	NEL-BH127_2.5m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	108	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	109	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	110	44	126

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1802245	Page	: 1 of 11
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 31-Jan-2018
Site	: ----	Issue Date	: 09-Feb-2018
Sampler	: SCOTT HILLIARD	No. of samples received	: 13
Order number	: ----	No. of samples analysed	: 13

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Control Samples (LCS)					
Hexavalent Chromium by Alkaline Digestion and DA Finish	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	05-Feb-2018	06-Feb-2018	✔	05-Feb-2018	05-Feb-2018	✔
Soil Glass Jar - Unpreserved (EA001) NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	06-Feb-2018	07-Feb-2018	✔	06-Feb-2018	06-Feb-2018	✔
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	----	----	----	02-Feb-2018	13-Feb-2018	✔
Soil Glass Jar - Unpreserved (EA055) NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	----	----	----	02-Feb-2018	14-Feb-2018	✔



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH127_0.25m, NEL-BH127_1.05m,	NEL-BH127_0.6m, NEL-BH127_1.50m	30-Jan-2018	----	----	----	07-Feb-2018	29-Jul-2018	✓
Snap Lock Bag: Separate bag received (EA200) NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	----	----	----	07-Feb-2018	29-Jul-2018	✓
Snap Lock Bag: Separate bag received (EA200) NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	----	----	----	07-Feb-2018	30-Jul-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH127_0.25m, NEL-BH127_1.05m,	NEL-BH127_0.6m, NEL-BH127_1.50m	30-Jan-2018	----	----	----	07-Feb-2018	29-Jul-2018	✓
Snap Lock Bag: Separate bag received (EA200) NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	----	----	----	07-Feb-2018	29-Jul-2018	✓
Snap Lock Bag: Separate bag received (EA200) NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	----	----	----	07-Feb-2018	30-Jul-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	05-Feb-2018	29-Jul-2018	✓	05-Feb-2018	29-Jul-2018	✓
Soil Glass Jar - Unpreserved (EG005T) NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	05-Feb-2018	30-Jul-2018	✓	05-Feb-2018	30-Jul-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	05-Feb-2018	27-Feb-2018	✓	08-Feb-2018	27-Feb-2018	✓
Soil Glass Jar - Unpreserved (EG035T) NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	05-Feb-2018	28-Feb-2018	✓	08-Feb-2018	28-Feb-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)								
NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	05-Feb-2018	27-Feb-2018	✔	06-Feb-2018	12-Feb-2018	✔
Soil Glass Jar - Unpreserved (EG048G)								
NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	05-Feb-2018	28-Feb-2018	✔	06-Feb-2018	12-Feb-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)								
NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	02-Feb-2018	13-Feb-2018	✔	05-Feb-2018	16-Feb-2018	✔
Soil Glass Jar - Unpreserved (EK026SF)								
NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	02-Feb-2018	14-Feb-2018	✔	05-Feb-2018	16-Feb-2018	✔
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)								
NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	02-Feb-2018	27-Feb-2018	✔	05-Feb-2018	27-Feb-2018	✔
Soil Glass Jar - Unpreserved (EK040T)								
NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	02-Feb-2018	28-Feb-2018	✔	05-Feb-2018	28-Feb-2018	✔
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)								
NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	02-Feb-2018	13-Feb-2018	✔	05-Feb-2018	14-Mar-2018	✔
Soil Glass Jar - Unpreserved (EP066-EM)								
NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	05-Feb-2018	14-Feb-2018	✔	05-Feb-2018	17-Mar-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	01-Feb-2018	06-Feb-2018	✔	02-Feb-2018	06-Feb-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	02-Feb-2018	07-Feb-2018	✔	02-Feb-2018	07-Feb-2018	✔
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	01-Feb-2018	06-Feb-2018	✔	02-Feb-2018	06-Feb-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	02-Feb-2018	07-Feb-2018	✔	02-Feb-2018	07-Feb-2018	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	01-Feb-2018	06-Feb-2018	✔	02-Feb-2018	06-Feb-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	02-Feb-2018	07-Feb-2018	✔	02-Feb-2018	07-Feb-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	02-Feb-2018	13-Feb-2018	✔	05-Feb-2018	14-Mar-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	05-Feb-2018	14-Feb-2018	✔	05-Feb-2018	17-Mar-2018	✔



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH127_0.25m,	NEL-BH127_0.6m,	30-Jan-2018	02-Feb-2018	13-Feb-2018	✓	05-Feb-2018	14-Mar-2018	✓
NEL-BH127_1.05m,	NEL-BH127_1.50m,							
NEL-BH128A_0.23m,	NEL-BH128A_0.45m,							
NEL-BH128A_0.9m,	NEL-BH128A_1.2m							
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH126_2.0,	NEL-BH126_3.0,	31-Jan-2018	05-Feb-2018	14-Feb-2018	✓	05-Feb-2018	17-Mar-2018	✓
NEL-BH127_2.0m,	NEL-BH127_2.5m,							
NEL-BH127_3.0m								
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH127_0.25m,	NEL-BH127_0.6m,	30-Jan-2018	02-Feb-2018	13-Feb-2018	✓	05-Feb-2018	14-Mar-2018	✓
NEL-BH127_1.05m,	NEL-BH127_1.50m,							
NEL-BH128A_0.23m,	NEL-BH128A_0.45m,							
NEL-BH128A_0.9m,	NEL-BH128A_1.2m							
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH126_2.0,	NEL-BH126_3.0,	31-Jan-2018	05-Feb-2018	14-Feb-2018	✓	05-Feb-2018	17-Mar-2018	✓
NEL-BH127_2.0m,	NEL-BH127_2.5m,							
NEL-BH127_3.0m								
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH127_0.25m,	NEL-BH127_0.6m,	30-Jan-2018	02-Feb-2018	13-Feb-2018	✓	05-Feb-2018	14-Mar-2018	✓
NEL-BH127_1.05m,	NEL-BH127_1.50m,							
NEL-BH128A_0.23m,	NEL-BH128A_0.45m,							
NEL-BH128A_0.9m,	NEL-BH128A_1.2m							
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH126_2.0,	NEL-BH126_3.0,	31-Jan-2018	05-Feb-2018	14-Feb-2018	✓	05-Feb-2018	17-Mar-2018	✓
NEL-BH127_2.0m,	NEL-BH127_2.5m,							
NEL-BH127_3.0m								



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	01-Feb-2018	06-Feb-2018	✔	02-Feb-2018	06-Feb-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	02-Feb-2018	13-Feb-2018	✔	05-Feb-2018	14-Mar-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	02-Feb-2018	07-Feb-2018	✔	02-Feb-2018	07-Feb-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	05-Feb-2018	14-Feb-2018	✔	05-Feb-2018	17-Mar-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	01-Feb-2018	06-Feb-2018	✔	02-Feb-2018	06-Feb-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH127_0.25m, NEL-BH127_1.05m, NEL-BH128A_0.23m, NEL-BH128A_0.9m,	NEL-BH127_0.6m, NEL-BH127_1.50m, NEL-BH128A_0.45m, NEL-BH128A_1.2m	30-Jan-2018	02-Feb-2018	13-Feb-2018	✔	05-Feb-2018	14-Mar-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	02-Feb-2018	07-Feb-2018	✔	02-Feb-2018	07-Feb-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH126_2.0, NEL-BH127_2.0m, NEL-BH127_3.0m	NEL-BH126_3.0, NEL-BH127_2.5m,	31-Jan-2018	05-Feb-2018	14-Feb-2018	✔	05-Feb-2018	17-Mar-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	28	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	3	25	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard

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 Work Order : EM1802245
 Client : GHD PTY LTD
 Project : 31350060803



Matrix: **SOIL**
Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CERTIFICATE OF ANALYSIS

Work Order : **EM1802327**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **North East Link**
No. of samples received : **3**
No. of samples analysed : **3**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 18-Jan-2018 16:50
Date Analysis Commenced : 02-Feb-2018
Issue Date : 06-Feb-2018 12:03



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1801471.



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-BH125_0.75m	NEL-BH125_1.0m	NEL-BH125_1.5m	----	----
Client sampling date / time				17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1802327-001	EM1802327-002	EM1802327-003	-----	-----
				Result	Result	Result	----	----
EG005C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	----	<0.1	----	----	----
Copper	7440-50-8	0.1	mg/L	<0.1	----	----	----	----
Lead	7439-92-1	0.1	mg/L	----	----	7.3	----	----
Tin	7440-31-5	0.1	mg/L	----	<0.1	<0.1	----	----
Zinc	7440-66-6	0.1	mg/L	0.6	4.5	2.9	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH125_0.75m	NEL-BH125_1.0m	NEL-BH125_1.5m	----	----
Client sampling date / time				17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1802327-001	EM1802327-002	EM1802327-003	-----	-----
				Result	Result	Result	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	7.8	8.5	9.1	----	----
After HCl pH	----	0.1	pH Unit	1.2	1.4	1.3	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	----	----
Final pH	----	0.1	pH Unit	4.9	5.6	5.4	----	----

Rebatch

Client / Client code: GHD

Project: 31350060803

Project Manager: DAVID QUINN

Date /time sample rec: 18/1 @ 4:50pm

Date/time Instructions rec: 2/2 @ 9:40am

Due date: STD

Due date surcharge:

CS Contact:

Shirley

Additional Information:

Environmental Division

Melbourne

Work Order Reference

EM1802327



Telephone : + 61-3-8549 9600

MS: 0345

[illegible]

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Friday, 2 February 2018 9:40 AM
To: Shirley LeCornu
Cc: mark.s.davidson@aeom.com; nazuha.rosli@aeom.com
Subject: North East Link Leachability Analysis

Hi Shirley,

As discussed, can I please have leachability analysis on the samples listed below.

Summary of Thresholds Reached or Exceeded

EPA Victoria Publication IWRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Category B

Client Sample ID	ALS Sample ID	Compound	Method	LOR	Limits
NEL-BH125_0.75m	EM1801471-003	Copper	EG005T	5	< 20,000 mg/kg

EPA Victoria Publication IWRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Category C

Client Sample ID	ALS Sample ID	Compound	Method	LOR	Limits
NEL-BH125_0.75m	EM1801471-003	Copper	EG005T	5	< 5,000 mg/kg
NEL-BH125_1.5m	EM1801471-005	Lead	EG005T	5	< 1,500 mg/kg

EPA Victoria Publication IWRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Client Sample ID	ALS Sample ID	Compound	Method	LOR	Limits
NEL-BH125_0.75m	EM1801471-003	Copper	EG005T	5	< 100 mg/kg
NEL-BH125_0.75m	EM1801471-003	Zinc	EG005T	5	< 200 mg/kg
NEL-BH125_1.0m	EM1801471-004	Arsenic	EG005T	5	< 20 mg/kg
NEL-BH125_1.0m	EM1801471-004	Tin	EG005T	5	< 50 mg/kg
NEL-BH125_1.0m	EM1801471-004	Zinc	EG005T	5	< 200 mg/kg
NEL-BH125_1.5m	EM1801471-005	Lead	EG005T	5	< 300 mg/kg
NEL-BH125_1.5m	EM1801471-005	Tin	EG005T	5	< 50 mg/kg
NEL-BH125_1.5m	EM1801471-005	Zinc	EG005T	5	< 200 mg/kg

Thanks,

David Quinn

Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
Water | Energy & Resources | Environment | Property & Buildings | Transportation

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1802327

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060803</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : ----</p> <p>Sampler : ----</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9601</p> <p>Page : 1 of 2</p> <p>Quote number : EM2018GHDSER0003 (North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

Date Samples Received : 18-Jan-2018 16:50	Issue Date : 02-Feb-2018
Client Requested Due Date : 09-Feb-2018	Scheduled Reporting Date : 09-Feb-2018

Delivery Details

Mode of Delivery : Samples On Hand	Security Seal : Not Available
No. of coolers/boxes : ----	Temperature : ----
Receipt Detail :	No. of samples received / analysed : 3 / 3

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- This is a rebatch of EM1801471.
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- ### Summary of Sample(s) and Requested Analysis

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - E Leachate	SOIL - E ASPL Leachate
EM1802327-001	17-Jan-2018 00:00	NEL-BH125_0.75m	✓	✓
EM1802327-002	17-Jan-2018 00:00	NEL-BH125_1.0m	✓	✓
EM1802327-003	17-Jan-2018 00:00	NEL-BH125_1.5m	✓	✓

Email GHDLabreports@ghd.com

QUALITY CONTROL REPORT

Work Order	: EM1802327	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 18-Jan-2018
Order number	: ----	Date Analysis Commenced	: 02-Feb-2018
C-O-C number	: ----	Issue Date	: 06-Feb-2018
Sampler	: ----		
Site	: ----		
Quote number	: North East Link		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Recovery Limits (%)</i>
EG005C: Leachable Metals by ICPAES (QC Lot: 1410672)									
EB1802958-001	Anonymous	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Tin	7440-31-5	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Zinc	7440-66-6	0.1	mg/L	0.4	0.4	0.00	No Limit
EM1802327-002	NEL-BH125_1.0m	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Tin	7440-31-5	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Zinc	7440-66-6	0.1	mg/L	4.5	4.4	0.00	0% - 20%



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1410672)								
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	97.0	89	119
EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	1 mg/L	89.9	88	115
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	93.7	88	113
EG005C: Tin	7440-31-5	0.1	mg/L	<0.1	1 mg/L	89.0	86	115
EG005C: Zinc	7440-66-6	0.1	mg/L	<0.1	1 mg/L	92.4	87	114

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1410672)							
EB1802958-002	Anonymous	EG005C: Arsenic	7440-38-2	1 mg/L	100	88	124
		EG005C: Copper	7440-50-8	1 mg/L	96.1	91	121
		EG005C: Lead	7439-92-1	1 mg/L	93.7	86	118
		EG005C: Tin	7440-31-5	1 mg/L	87.8	84	122
		EG005C: Zinc	7440-66-6	1 mg/L	90.8	85	123

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1802327	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 18-Jan-2018
Site	: ----	Issue Date	: 06-Feb-2018
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EN60: ASLP Leaching Procedure								
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a)	17-Jan-2018	02-Feb-2018	16-Jul-2018	✔	----	----	----	
NEL-BH125_0.75m,								
NEL-BH125 1.5m								

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG005C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)								
NEL-BH125_0.75m, NEL-BH125_1.5m	NEL-BH125_1.0m,	02-Feb-2018	05-Feb-2018	01-Aug-2018	✔	05-Feb-2018	01-Aug-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1802348**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **North East Link**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 25-Jan-2018 13:00
Date Analysis Commenced : 02-Feb-2018
Issue Date : 06-Feb-2018 12:03



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1801849.



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

NEL-BH125_3.0m

Client sampling date / time

23-Jan-2018 00:00

Compound

CAS Number

LOR

Unit

EM1802348-001

Result

EG005C: Leachable Metals by ICPAES

Lead	7439-92-1	0.1	mg/L	1.4	----	----	----	----
------	-----------	-----	------	-----	------	------	------	------



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH125_3.0m	----	----	----	----
				Client sampling date / time	23-Jan-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1802348-001	-----	-----	-----	-----
					Result	----	----	----	----
EN60: ASLP Leaching Procedure									
Initial pH	----	0.1	pH Unit		7.2	----	----	----	----
After HCl pH	----	0.1	pH Unit		1.2	----	----	----	----
Extraction Fluid pH	----	0.1	pH Unit		5.0	----	----	----	----
Final pH	----	0.1	pH Unit		4.9	----	----	----	----

Rebatch

Client / Client code: GHD

Project: 31350060803

Project Manger: DAVID QUINN

Date /time sample rec: 21/1 @ 1pm

Date/time Instructions rec: 2/2 @ 12:09am

Due date: STD

Due date surcharge:

CS Contact: Shirley

Additional Information:

Environmental Division

Melbourne

Work Order Reference

Work Order Reference
EM1802348



Telephone : + 61-3-8549 9600

[illegible]

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Friday, 2 February 2018 12:09 PM
To: Shirley LeCornu
Cc: nazuha.rosli@aecom.com; mark.s.davidson@aecom.com
Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1801849 | Overall Description: North East L
Attachments: EM1801849_0_COA.pdf; EM1801849_0_ENMRG.CSV; EM1801849_0_QC.pdf; 31350060803.ESDAT_EM1801849_0.Chemistry2e.CSV; 31350060803.ESDAT_EM1801849_0.Header.XML; 31350060803.ESDAT_EM1801849_0.Sample2e.CSV; EM1801849_COC.pdf; EM1801849_0_COA_GL_EPA_WASTE.pdf; EM1801849_0_QCI.pdf; L617382_INV.pdf

Hi Shirley,

Can we please have a leachability test done for lead for the below sample.

Summary of Thresholds Reached or Exceeded

EPA Victoria Publication IVRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Client Sample ID	ALS Sample ID	Compound	Method	LOD	Limits	Result
NEL_BH125_3.0m	EM1801849-001	Lead	EG3007	5	< 300 mg/kg	455 mg/kg

Thanks,

David Quinn

Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com

Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>

Water | Energy & Resources | Environment | Property & Buildings | Transportation

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

Please consider our environment before printing this email

From: angel-no-reply@alsglobal.com [mailto:angel-no-reply@alsglobal.com]
Sent: Friday, 2 February 2018 12:03 PM
To: David Quinn <David.Quinn@ghd.com>
Subject: RESULTS & EDD & INVOICE for ALS Workorder : EM1801849 | Overall Description: North East L



Deliverables for ALS Workorder EM1801849

Project: 31350060803

Overall Description: North East L

Dear DAVID QUINN,

Please find enclosed the following deliverables for **EM1801849**:

- EM1801849_0_COA.pdf
- EM1801849_0_ENMRG.CSV
- 31350060803.ESDAT_EM1801849_0.Chemistry2e.CSV
- 31350060803.ESDAT_EM1801849_0.Header.XML
- 31350060803.ESDAT_EM1801849_0.Sample2e.CSV
- EM1801849_0_QC.pdf

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1802348**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 31350060803	Page	: 1 of 2
Order number	: ----	Quote number	: EM2018GHDSER0003 (North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 25-Jan-2018 13:00	Issue Date	: 02-Feb-2018
Client Requested Due Date	: 09-Feb-2018	Scheduled Reporting Date	: 09-Feb-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- This is a rebatch of EM1801849.
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- ### Summary of Sample(s) and Requested Analysis

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - E Leachability	SOIL - E ASLP Leachability
EM1802348-001	23-Jan-2018 00:00	NEL-BH125_3.0m	✓	✓

Email GHDLabreports@ghd.com

QUALITY CONTROL REPORT

Work Order	: EM1802348	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 25-Jan-2018
Order number	: ----	Date Analysis Commenced	: 02-Feb-2018
C-O-C number	: ----	Issue Date	: 06-Feb-2018
Sampler	: ----		
Site	: ----		
Quote number	: North East Link		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1410672)									
EB1802958-001	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1802327-002	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit		Result	Concentration	LCS	Low
EG005C: Leachable Metals by ICPAES (QCLot: 1410672)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	93.7	88	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1410672)							
EB1802958-002	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	93.7	86	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1802348**

Page : 1 of 4

Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Project : **31350060803**
Site : ----
Sampler : ----
Order number : ----

Laboratory : Environmental Division Melbourne
Telephone : +61-3-8549 9630
Date Samples Received : 25-Jan-2018
Issue Date : 06-Feb-2018
No. of samples received : 1
No. of samples analysed : 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH125 3.0m	23-Jan-2018	02-Feb-2018	22-Jul-2018	✓	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH125 3.0m	02-Feb-2018	05-Feb-2018	01-Aug-2018	✔	05-Feb-2018	01-Aug-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1802868**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **EN/005/17**
No. of samples received : **2**
No. of samples analysed : **2**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 31-Jan-2018 16:45
Date Analysis Commenced : 13-Feb-2018
Issue Date : 16-Feb-2018 09:46



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC



General Comments

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Where moisture determination has been performed, results are reported on a dry weight basis.

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1802245.



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				NEL-BH128A_0.45m	NEL-BH128A_1.2m	----	----	----
Client sampling date / time				30-Jan-2018 00:00	30-Jan-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1802868-001	EM1802868-002	-----	-----	-----
				Result	Result	----	----	----
EG005C: Leachable Metals by ICPAES								
Zinc	7440-66-6	0.1	mg/L	----	30.3	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.1	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH128A_0.45m	NEL-BH128A_1.2m	----	----	----
Client sampling date / time					30-Jan-2018 00:00	30-Jan-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1802868-001	EM1802868-002	-----	-----	-----
					Result	Result	----	----	----
EN60: ASLP Leaching Procedure									
Initial pH	----	0.1	pH Unit		8.0	7.5	----	----	----
After HCl pH	----	0.1	pH Unit		1.4	1.4	----	----	----
Extraction Fluid pH	----	0.1	pH Unit		5.0	5.0	----	----	----
Final pH	----	0.1	pH Unit		5.1	5.1	----	----	----

Rebatch

Client / Client code: GHDSER

Project: North East Link project

Project Manger: David Quinn

Date /time sample rec: 31/1/18 16.45

Date/time Instructions rec: 12/2/18 17.10

Due date: std

Due date surcharge:

Client aware of any holding time issues

Client aware of any issues with volatiles as sample(s) have already been mixed

Asbestos may be present in sample(s)

CS Contact: B Sheen

Additional Information:

Environmental Division

Melbourne

Work Order Reference

Work Order Reference
EM1802868



Telephone : + 51-3-8549 9600

MS: 536

SN 12/2

[illegible]

COC Melbourne

From: David Quinn <David.Quinn@ghd.com>
Sent: Monday, 12 February 2018 5:10 PM
To: Melbourne Enviro Services
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1802245 | Overall Description: North East Link Project

Follow Up Flag: Follow up
Flag Status: Completed

Hi,

Can someone please follow up on the below request.

Thanks,
David

From: David Quinn
Sent: Friday, 9 February 2018 9:44 AM
To: Shirley Lecornu (InTouch) <shirley.lecornu@alsglobal.com>
Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1802245 | Overall Description: North East Link Project

Hi Shirley,

Can I please have leachability tests done for the below samples /parameters:

Summary of Thresholds Reached or Exceeded

EPA Victoria Publication MVRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

<i>Client Sample ID</i>	<i>ALS Sample ID</i>	<i>Compound</i>	<i>Method</i>
NEL-BH128A_0.45m	EM1802245-006	Fluoride	EK040T
NEL-BH128A_1.2m	EM1802245-008	Zinc	EG005T

Thanks

David Quinn

Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

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From: angel-no-reply@alsglobal.com [mailto:angel-no-reply@alsglobal.com]
Sent: Friday, 9 February 2018 8:30 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: RESULTS & EDD & INVOICE for ALS Workorder : EM1802245 | Overall Description: North East Link Project

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1802868

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060803</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : ----</p> <p>Sampler :</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9601</p> <p>Page : 1 of 2</p> <p>Quote number : EB2017GHDSE0022 (EN/005/17)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

Date Samples Received : 31-Jan-2018 16:45	Issue Date : 12-Feb-2018
Client Requested Due : 19-Feb-2018	Scheduled Reporting Date : 19-Feb-2018
Date	

Delivery Details

Mode of Delivery : Samples On Hand	Security Seal : Not Available
No. of coolers/boxes : ----	Temperature : ----
Receipt Detail :	No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **This is a rebatch of EM1802245.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EK040-P Fluoride(PC)	SOIL - EN60a ASLP Leachate Procedure
EM1802868-001	30-Jan-2018 00:00	NEL-BH128A_0.45m		✓	✓
EM1802868-002	30-Jan-2018 00:00	NEL-BH128A_1.2m	✓		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL ACCOUNTS (Melbourne)

- A4 - AU Tax Invoice (INV)

Email ap-fss@ghd.com

DAVID QUINN

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for ESdat (ESRN_ESDAT)

Email david.quinn@ghd.com
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GHD LAB REPORTS

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESdat (ESRN_ESDAT)

Email ghdlabreports@ghd.com
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QUALITY CONTROL REPORT

Work Order	: EM1802868	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 31-Jan-2018
Order number	: ----	Date Analysis Commenced	: 13-Feb-2018
C-O-C number	: ----	Issue Date	: 16-Feb-2018
Sampler	: ----		
Site	: ----		
Quote number	: EN/005/17		
No. of samples received	: 2		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Recovery Limits (%)</i>
EG005C: Leachable Metals by ICPAES (QC Lot: 1432646)									
EM1802868-002	NEL-BH128A_1.2m	EG005C: Zinc	7440-66-6	0.1	mg/L	30.3	31.2	2.80	0% - 20%
EK040P: Fluoride by PC Titrator (QC Lot: 1435207)									
EM1802967-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.7	0.7	0.00	No Limit
EM1802979-003	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.6	0.6	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1432646)								
EG005C: Zinc	7440-66-6	0.1	mg/L	<0.1	1 mg/L	104	87	114
EK040P: Fluoride by PC Titrator (QCLot: 1435207)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	112	85	112

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1432646)							
EM1802874-001	Anonymous	EG005C: Zinc	7440-66-6	1 mg/L	101	85	123
EK040P: Fluoride by PC Titrator (QCLot: 1435207)							
EM1802967-005	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	104	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1802868**

Page : 1 of 4

Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Project : **31350060803**
Site : ----
Sampler : ----
Order number : ----

Laboratory : Environmental Division Melbourne
Telephone : +61-3-8549 9630
Date Samples Received : 31-Jan-2018
Issue Date : 16-Feb-2018
No. of samples received : 2
No. of samples analysed : 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH128A_1.2m	30-Jan-2018	13-Feb-2018	29-Jul-2018	✔	----	----	----
Non-Volatile Leach: 28 day HT(e.g. Hg, CrVI) (EN60a) NEL-BH128A_0.45m	30-Jan-2018	13-Feb-2018	27-Feb-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH128A_1.2m	13-Feb-2018	14-Feb-2018	12-Aug-2018	✓	14-Feb-2018	12-Aug-2018	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) NEL-BH128A_0.45m	13-Feb-2018	----	----	----	15-Feb-2018	13-Mar-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	2	50.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	SOIL	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Digestion for Total Recoverable Metals in TCLP Leachate	* EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1803248**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **SCOTT HILLIARD**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **3**
No. of samples analysed : **3**

Page : 1 of 9
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 19-Feb-2018 16:55
Date Analysis Commenced : 21-Feb-2018
Issue Date : 26-Feb-2018 16:41



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- **EA200: As only one sample container was submitted for multiple tests, at the client's request, sub sampling was conducted prior to Asbestos analysis. As this has the potential to understate detection, results should be scrutinised accordingly.**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH108_0.2m	NEL-BH108_0.7m	NEL-BH108_1.2m	----	----
Client sampling date / time					19-Feb-2018 00:00	19-Feb-2018 00:00	19-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803248-001	EM1803248-002	EM1803248-003	-----	-----
					Result	Result	Result	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		4.8	5.6	6.5	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		28.8	30.4	21.6	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	----	----
Asbestos Type	1332-21-4	-	--		-	-	-	----	----
Sample weight (dry)	----	0.01	g		35.2	35.1	37.7	----	----
APPROVED IDENTIFIER:	----	-	--		E.DAOS	E.DAOS	E.DAOS	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	8	5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Copper	7440-50-8	5	mg/kg		17	23	22	----	----
Lead	7439-92-1	5	mg/kg		14	22	14	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg		31	57	53	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	----	----
Zinc	7440-66-6	5	mg/kg		26	52	68	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		540	700	640	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH108_0.2m	NEL-BH108_0.7m	NEL-BH108_1.2m	----	----
Client sampling date / time					19-Feb-2018 00:00	19-Feb-2018 00:00	19-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803248-001	EM1803248-002	EM1803248-003	-----	-----
					Result	Result	Result	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH108_0.2m	NEL-BH108_0.7m	NEL-BH108_1.2m	----	----
Client sampling date / time					19-Feb-2018 00:00	19-Feb-2018 00:00	19-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803248-001	EM1803248-002	EM1803248-003	-----	-----
					Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ ΣSum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	<5	----	----
Dinoseb	88-85-7	5	mg/kg		<5	<5	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	<5	----	----
^ ΣSum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH108_0.2m	NEL-BH108_0.7m	NEL-BH108_1.2m	----	----
Client sampling date / time					19-Feb-2018 00:00	19-Feb-2018 00:00	19-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803248-001	EM1803248-002	EM1803248-003	-----	-----
					Result	Result	Result	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4.4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4.4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4.4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH108_0.2m	NEL-BH108_0.7m	NEL-BH108_1.2m	----	----
Client sampling date / time					19-Feb-2018 00:00	19-Feb-2018 00:00	19-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803248-001	EM1803248-002	EM1803248-003	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		89.3	87.7	90.3	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		85.5	89.3	80.1	----	----
Toluene-D8	2037-26-5	0.1	%		80.5	86.4	73.3	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		97.4	91.1	92.5	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		97.1	98.6	97.4	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		82.2	79.0	78.6	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		86.4	81.0	88.4	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		96.9	95.2	87.1	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		92.3	91.7	83.1	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		88.8	87.1	97.2	----	----
Anthracene-d10	1719-06-8	0.025	%		125	124	96.0	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		128	125	99.9	----	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	NEL-BH108_0.2m - 19-Feb-2018 00:00	Brown clay like soil.
EA200: Description	NEL-BH108_0.7m - 19-Feb-2018 00:00	Brown clay like soil.
EA200: Description	NEL-BH108_1.2m - 19-Feb-2018 00:00	Brown clay like soil.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141



Quote # / GHD Reference

Laboratory: ALS SPRINGVALE

Address: me 124 18

Laboratory Contact: SHIRLEY LELORNU

Results to be provided in ESDAT compatible format

SAMPLE COMMENTS

Environmental Division
Melbourne
Work Order Reference
EM1803248



Telephone : + 61-3-8549 9600

3

cc to Mark Davidson (AECOM)
~~Nazaba~~ Nazaba Rosli (AECOM).

1

Y

Name	Date/Time Received
SCOTT HILLIARD	19/2/18 PM

LABORATORY

19/2/18 Pm

Date/Time Relinquished

Donner (Am) 19/2, 16.55

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 11 January 2018 2:35 PM
To: Shirley LeCornu
Subject: RE: EM1801198 - GHD - 31/35006/0803

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Shirley,

There will be some more samples coming through so we'll hold off analysing at the moment, so they can be done in a batch.

The analysis will be VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Thanks,

David Quinn
Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

Please consider our environment before printing this email

From: Shirley LeCornu [mailto:shirley.lecornu@alsglobal.com]
Sent: Thursday, 11 January 2018 9:07 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1801198 - GHD - 31/35006/0803

Hi David

Can you please let me know analysis required for the samples we received yesterday. COC attached.

Thanks

Shirley

Shirley LeCornu
Client Services Officer – Springvale
Environmental



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F +61 3 8549 9626
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Australia

We are keen for your feedback! [Please click here for your 1 question survey](#)

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**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1803248**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 31350060803	Page	: 1 of 3
Order number	: ----	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: SCOTT HILLIARD		

Dates

Date Samples Received	: 19-Feb-2018 16:55	Issue Date	: 20-Feb-2018
Client Requested Due Date	: 26-Feb-2018	Scheduled Reporting Date	: 26-Feb-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 5.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 3 / 3

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **EA200: As only one sample container was submitted for multiple tests, at the client's request, sub sampling was conducted prior to Asbestos analysis. As this has the potential to understate detection, results should be scrutinised accordingly.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Asbestos Identification in Soils : EA200		
NEL-BH108_0.2m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH108_0.7m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH108_1.2m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200 Asbestos Identification in Soils -	SOIL - P-16 IWRG 621
EM1803248-001	19-Feb-2018 00:00	NEL-BH108_0.2m	✓	✓	✓
EM1803248-002	19-Feb-2018 00:00	NEL-BH108_0.7m	✓	✓	✓
EM1803248-003	19-Feb-2018 00:00	NEL-BH108_1.2m	✓	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1803248	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
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Project	: 31350060803	Date Samples Received	: 19-Feb-2018
Order number	: ----	Date Analysis Commenced	: 21-Feb-2018
C-O-C number	: ----	Issue Date	: 26-Feb-2018
Sampler	: SCOTT HILLIARD		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Emily Daos	Approved Asbestos Identifier	Melbourne Asbestos, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1449385)									
EM1803211-091	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.6	7.5	1.32	0% - 20%
EM1803319-004	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.3	7.2	1.38	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1446976)									
EM1803097-060	Anonymous	EA055: Moisture Content	----	1	%	10.7	10.7	0.00	0% - 50%
EM1803259-003	Anonymous	EA055: Moisture Content	----	1	%	9.9	9.1	8.17	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1444988)									
EM1803211-085	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	44	43	3.06	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	13	14	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	29	31	7.10	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	134	134	0.00	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	87	77	11.6	0% - 50%
EM1803248-003	NEL-BH108_1.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	53	61	13.7	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	22	26	14.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	17	15.8	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1444988) - continued									
EM1803248-003	NEL-BH108_1.2m	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	68	77	12.7	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1444989)									
EM1803211-085	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	0.00	No Limit
EM1803248-003	NEL-BH108_1.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1447487)									
EM1803211-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1803211-060	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1450277)									
EM1803211-002	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1803211-060	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1446671)									
EM1803248-001	NEL-BH108_0.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	540	550	2.94	0% - 50%
EM1803328-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	150	150	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1444969)									
EM1803211-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1803211-068	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1446700)									
EM1803248-001	NEL-BH108_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1803328-004	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1446700)									
EM1803248-001	NEL-BH108_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1803328-004	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1446700)									
EM1803248-001	NEL-BH108_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1446700) - continued									
EM1803248-001	NEL-BH108_0.2m	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1803328-004	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1444967)							
EM1803211-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1444967) - continued									
EM1803211-002	Anonymous	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1803211-068	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1444967)									
EM1803211-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1803211-068	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EM1803211-068	Anonymous	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1444967)									
EM1803211-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1444967) - continued									
EM1803211-002	Anonymous	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1803211-068	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1444967)									
EM1803211-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1444967) - continued									
EM1803211-002	Anonymous	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1803211-068	Anonymous	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1444968)									
EM1803211-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1803211-068	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1446700)									
EM1803248-001	NEL-BH108_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

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 Work Order : EM1803248
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1446700) - continued									
EM1803328-004	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1444968)									
EM1803211-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1803211-068	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1446700)									
EM1803248-001	NEL-BH108_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1803328-004	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1444988)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	84.9	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	95.7	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	84.2	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	80.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	84.8	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	99.8	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	105	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	82.8	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1444989)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.8	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1447487)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	92.3	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1450277)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	90.6	80	110
EK040T: Fluoride Total (QCLot: 1446671)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	100	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1444969)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	113	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1446700)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	117	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	112	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	111	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	106	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	103	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	102	74	114
EP074H: Naphthalene (QCLot: 1446700)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	99.7	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1446700)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	127	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	106	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1446700) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	103	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	122	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	110	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	108	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	119	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	118	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	101	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	112	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	103	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	109	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	116	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	112	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	110	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	99.8	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	97.8	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	101	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1444967)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	116	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	100.0	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	115	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	106	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	108	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	99.9	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	116	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	122	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	92.0	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1444967)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	101	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	127	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	102	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	96.0	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	# 122	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	103	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	90.6	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	81.8	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	96.3	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	104	12	132



Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444967)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	115	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	119	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	120	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	120	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	115	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	79.1	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	116	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	115	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	109	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	116	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	117	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	120	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	104	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	105	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	108	55	137
EP075I: Organochlorine Pesticides (QCLot: 1444967)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	# 125	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	116	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	120	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	126	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	123	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	116	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	118	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	114	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	113	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	113	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	123	63	136
EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	106	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	123	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	110	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	128	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	122	66	135
EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	118	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	120	63	139
EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	116	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	119	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1444968)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	103	73	134



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1444968) - continued								
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	107	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	103	77	116
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1446700)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	107	69	114
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1444968)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	103	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	105	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	101	68	124
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1446700)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	103	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
	X							

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1444988)							
EM1803211-086	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	100	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	118	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	110	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	83.4	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	112	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	83.4	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	116	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1444989)							
EM1803211-086	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	105	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1447487)							
EM1803211-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	74.6	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1450277)							
EM1803211-005	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	103	77	113
EK040T: Fluoride Total (QCLot: 1446671)							
EM1803248-002	NEL-BH108_0.7m	EK040T: Fluoride	16984-48-8	400 mg/kg	106	70	130



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1444969)							
EM1803211-017	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	108	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1446700)							
EM1803248-002	NEL-BH108_0.7m	EP074-UT: Benzene	71-43-2	2 mg/kg	104	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	101	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1446700)							
EM1803248-002	NEL-BH108_0.7m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	79.6	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	94.9	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	102	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1444967)							
EM1803211-005	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	92.7	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	77.6	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	67.7	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1444967)							
EM1803211-005	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	86.0	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	73.9	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1444967)							
EM1803211-005	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	90.7	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	116	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1444968)							
EM1803211-011	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	100	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	103	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	99.0	64	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1446700)							
EM1803248-002	NEL-BH108_0.7m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	73.7	43	111
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1444968)							
EM1803211-011	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	99.9	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	101	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	99.5	44	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1446700)							
EM1803248-002	NEL-BH108_0.7m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	66.0	42	106

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1803248	Page	: 1 of 8
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 19-Feb-2018
Site	: ----	Issue Date	: 26-Feb-2018
Sampler	: SCOTT HILLIARD	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Matrix Spike outliers occur.
- Laboratory Control outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075A: Phenolic Compounds (Non-halogenated)	QC-1444967-001	----	2,4-Dimethylphenol	105-67-9	122 %	43-120%	Recovery greater than upper control limit
EP075I: Organochlorine Pesticides	QC-1444967-001	----	alpha-BHC	319-84-6	125 %	68-122%	Recovery greater than upper control limit

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: **x** = Holding time breach ; **✓** = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	23-Feb-2018	26-Feb-2018	✓	23-Feb-2018	23-Feb-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	----	----	----	21-Feb-2018	05-Mar-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	----	----	----	22-Feb-2018	18-Aug-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	----	----	----	22-Feb-2018	18-Aug-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	22-Feb-2018	18-Aug-2018	✓	22-Feb-2018	18-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	22-Feb-2018	19-Mar-2018	✓	23-Feb-2018	19-Mar-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	19-Mar-2018	✓	21-Feb-2018	28-Feb-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	22-Feb-2018	05-Mar-2018	✓	23-Feb-2018	08-Mar-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	19-Mar-2018	✓	23-Feb-2018	19-Mar-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	05-Mar-2018	✓	21-Feb-2018	02-Apr-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	26-Feb-2018	✓	23-Feb-2018	26-Feb-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	26-Feb-2018	✓	23-Feb-2018	26-Feb-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	26-Feb-2018	✓	23-Feb-2018	26-Feb-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	05-Mar-2018	✓	21-Feb-2018	02-Apr-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	05-Mar-2018	✓	21-Feb-2018	02-Apr-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	05-Mar-2018	✔	21-Feb-2018	02-Apr-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	05-Mar-2018	✔	21-Feb-2018	02-Apr-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	05-Mar-2018	✔	21-Feb-2018	02-Apr-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	26-Feb-2018	✔	23-Feb-2018	26-Feb-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	05-Mar-2018	✔	21-Feb-2018	02-Apr-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	21-Feb-2018	26-Feb-2018	✔	23-Feb-2018	26-Feb-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Page : 6 of 8
 Work Order : EM1803248
 Client : GHD PTY LTD
 Project : 31350060803



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	* EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	* EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	* CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	* EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CERTIFICATE OF ANALYSIS

Work Order : EM1803435 Amendment : 2 Client : GHD PTY LTD Contact : MR DAVID QUINN Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 Telephone : ---- Project : 31350060803 Order number : ---- C-O-C number : ---- Sampler : ---- Site : ---- Quote number : EN/005/17 No. of samples received : 8 No. of samples analysed : 8	Page : 1 of 6 Laboratory : Environmental Division Melbourne Contact : Shirley LeCornu Address : 4 Westall Rd Springvale VIC Australia 3171 Telephone : +61-3-8549 9630 Date Samples Received : 18-Jan-2018 16:50 Date Analysis Commenced : 22-Feb-2018 Issue Date : 27-Feb-2018 15:23
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Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Amendment (27/02/2018): This report has been amended to add classification report. All analysis results are as per the previous report.
- This is a rebatch of EM1801471, EM1801849, EM1802245, EM1802327, EM1802348 and EM1802868.

Page : 3 of 6
Work Order : EM1803435 Amendment 2
Client : GHD PTY LTD
Project : 31350060803



Analytical Results

Sub-Matrix: ASLP LEACHATE
(Matrix: WATER)

Client sample ID

				NEL-BH125_0.4	NEL-BH125_0.75	NEL-BH125_1.0	NEL-BH126_0.3	NEL-BH128A_0.23
Client sampling date / time				17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	30-Jan-2018 00:00
Compound	CAS Number	LOR	Unit	EM1803435-001	EM1803435-002	EM1803435-003	EM1803435-006	EM1803435-007
				Result	Result	Result	Result	Result
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

NEL-BH128A_1.2

Client sampling date / time

30-Jan-2018 00:00

Compound

CAS Number

LOR

Unit

EM1803435-008

Result

EG005C: Leachable Metals by ICPAES

Lead	7439-92-1	0.1	mg/L	0.2	----	----	----	----
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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH125_0.4	NEL-BH125_0.75	NEL-BH125_1.0	NEL-BH125_1.5	NEL-BH125_3.0
Client sampling date / time					17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	17-Jan-2018 00:00	23-Jan-2018 00:00
Compound	CAS Number	LOR	Unit		EM1803435-001	EM1803435-002	EM1803435-003	EM1803435-004	EM1803435-005
					Result	Result	Result	Result	Result
EA055: Moisture Content									
Moisture Content	----	1.0	%		12.1	16.4	22.1	17.0	10.7
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		25	28	119	14	32
Copper	7440-50-8	5	mg/kg		11	17	29	20	11
Lead	7439-92-1	5	mg/kg		25	13	48	1730	498
Molybdenum	7439-98-7	2	mg/kg		<2	4	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		14	15	19	7	14
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	51	15	5
Zinc	7440-66-6	5	mg/kg		38	81	481	301	59
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EN60: ASLP Leaching Procedure									
Initial pH	----	0.1	pH Unit		7.8	----	----	----	----
After HCl pH	----	0.1	pH Unit		1.3	----	----	----	----
Extraction Fluid pH	----	0.1	pH Unit		5.0	----	----	----	----
Final pH	----	0.1	pH Unit		4.9	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH126_0.3	NEL-BH128A_0.23	NEL-BH128A_1.2	----	----
Client sampling date / time					17-Jan-2018 00:00	30-Jan-2018 00:00	30-Jan-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803435-006	EM1803435-007	EM1803435-008	-----	-----
					Result	Result	Result	----	----
EA055: Moisture Content									
Moisture Content	----	1.0	%		19.7	20.2	26.9	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	6	8	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	2	----	----
Chromium	7440-47-3	2	mg/kg		26	39	50	----	----
Copper	7440-50-8	5	mg/kg		13	17	222	----	----
Lead	7439-92-1	5	mg/kg		17	21	139	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg		16	21	30	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	13	----	----
Zinc	7440-66-6	5	mg/kg		113	80	2740	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EN60: ASLP Leaching Procedure									
Initial pH	----	0.1	pH Unit		7.7	7.9	----	----	----
After HCl pH	----	0.1	pH Unit		1.4	1.5	----	----	----
Extraction Fluid pH	----	0.1	pH Unit		5.0	5.0	----	----	----
Final pH	----	0.1	pH Unit		4.9	5.0	----	----	----

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 22 February 2018 10:44 AM
To: Shirley LeCornu
Subject: RE: North East Link Leachability Analysis

Hi Shirley,

Can we please have leachability tests done for lead on the following samples:

ALS ID: 1 • NEL-BH125_0.4 (EM1801471)
2 • NEL-BH125_0.75 (EM1801471)
3 • NEL-BH125_1.0 (EM1801471)
6 • NEL-BH126_0.3 (EM1801471)
7 • NEL-BH128A_0.23 (EM1802245)
8 • NEL-BH128A_1.2 (EM1802245)

Also can we please take additional sub samples from the below samples and have these re-analysed for IWRG621 metals: *+ total Cr*

ALS ID: 1 • NEL-BH125_0.4 (EM1801471)
2 • NEL-BH125_0.75m (EM1801471)
3 • NEL-BH125_1.0m (EM1801471)
4 • NEL-BH125_1.5m (EM1801471)
5 • NEL-BH125_3.0m (EM1801471)
6 • NEL-BH126_0.3 (EM1801471)
7 • NEL-BH128A_0.23 (EM1802245)
8 • NEL-BH128A_1.2 (EM1802245)

Any queries give me a call.

Many thanks,

David Quinn
Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
Water | Energy & Resources | Environment | Property & Buildings | Transportation

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

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GHD acknowledges the Traditional Owners of Country throughout Australia.
We pay respect to their continuing culture and Elders past, present and emerging.
[Click here](#) to learn about our Reconciliation Action Plan.

From: David Quinn
Sent: Friday, 2 February 2018 9:40 AM
To: Shirley Lecornu (InTouch) <shirley.lecornu@alsglobal.com>
Cc: Mark Davidson (InTouch) <mark.s.davidson@aecom.com>; Nazuha Rosli (InTouch) <nazuha.rosli@aecom.com>
Subject: North East Link Leachability Analysis

Hi Shirley,

As discussed, can I please have leachability analysis on the samples listed below.

Environmental Division
Melbourne
Work Order Reference
EM1803435



Telephone : + 61-3-8549 8600

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1803435

Amendment : 2

Client : **GHD PTY LTD**
 Contact : MR DAVID QUINN
 Address : LEVEL 8, 180 LONSDALE ST
 MELBOURNE VIC, AUSTRALIA 3001

Laboratory : Environmental Division Melbourne
 Contact : Shirley LeCornu
 Address : 4 Westall Rd Springvale VIC Australia
 3171

E-mail : david.quinn@ghd.com
 Telephone : ----
 Facsimile : ----

E-mail : shirley.lecornu@Alsglobal.com
 Telephone : +61-3-8549 9630
 Facsimile : +61-3-8549 9601

Project : 31350060803
 Order number : ----
 C-O-C number : ----
 Site : ----
 Sampler :

Page : 1 of 3
 Quote number : EB2017GHDSE0022 (EN/005/17)
 QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 18-Jan-2018 16:50
 Client Requested Due : 27-Feb-2018
 Date

Issue Date : 27-Feb-2018
 Scheduled Reporting Date : **27-Feb-2018**

Delivery Details

Mode of Delivery : Samples On Hand
 No. of coolers/boxes : ----
 Receipt Detail :

Security Seal : Not Available
 Temperature : ----
 No. of samples received / analysed : 8 / 8

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1801471, EM1801849, EM1802245, EM1802327, EM1802348 and EM1802868.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN60a ASLP Leachate Procedure	SOIL - P-16/1 + Total Cr IWRG 621 METALS (including Total Chromium)
EM1803435-001	17-Jan-2018 00:00	NEL-BH125_0.4	✓	✓	✓	✓
EM1803435-002	17-Jan-2018 00:00	NEL-BH125_0.75	✓	✓		✓
EM1803435-003	17-Jan-2018 00:00	NEL-BH125_1.0	✓	✓		✓
EM1803435-004	17-Jan-2018 00:00	NEL-BH125_1.5	✓			✓
EM1803435-005	23-Jan-2018 00:00	NEL-BH125_3.0	✓			✓
EM1803435-006	17-Jan-2018 00:00	NEL-BH126_0.3	✓	✓	✓	✓
EM1803435-007	30-Jan-2018 00:00	NEL-BH128A_0.23	✓	✓	✓	✓
EM1803435-008	30-Jan-2018 00:00	NEL-BH128A_1.2	✓	✓		✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: SOIL

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
					Date	Evaluation	Date	Evaluation
EA055: Moisture Content								
NEL-BH125_0.4	Soil Glass Jar - Unpreserved	----	31-Jan-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH125_0.75	Soil Glass Jar - Unpreserved	----	31-Jan-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH125_1.0	Soil Glass Jar - Unpreserved	----	31-Jan-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH125_1.5	Soil Glass Jar - Unpreserved	----	31-Jan-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH125_3.0	Soil Glass Jar - Unpreserved	----	06-Feb-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH126_0.3	Soil Glass Jar - Unpreserved	----	31-Jan-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH128A_0.23	Soil Glass Jar - Unpreserved	----	13-Feb-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH128A_1.2	Soil Glass Jar - Unpreserved	----	13-Feb-2018	18-Jan-2018	✓	22-Feb-2018	✗	
EG035T: Total Mercury by FIMS								
NEL-BH125_0.4	Soil Glass Jar - Unpreserved	14-Feb-2018	14-Feb-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH125_0.75	Soil Glass Jar - Unpreserved	14-Feb-2018	14-Feb-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH125_1.0	Soil Glass Jar - Unpreserved	14-Feb-2018	14-Feb-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH125_1.5	Soil Glass Jar - Unpreserved	14-Feb-2018	14-Feb-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH125_3.0	Soil Glass Jar - Unpreserved	20-Feb-2018	20-Feb-2018	18-Jan-2018	✓	22-Feb-2018	✗	
NEL-BH126_0.3	Soil Glass Jar - Unpreserved	14-Feb-2018	14-Feb-2018	18-Jan-2018	✓	22-Feb-2018	✗	

ACCOUNTS PAYABLE (Brisbane)

Email ap-fss@ghd.com

Email david.guinn@ghd.com

- [illegible]

Email ghdlabreports@ghd.com

- [illegible]

QUALITY CONTROL REPORT

Work Order : **EM1803435**

Page : 1 of 4

Amendment : **2**

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **MR DAVID QUINN**

Contact : Shirley LeCornu

Address : **LEVEL 8, 180 LONSDALE ST
MELBOURNE VIC, AUSTRALIA 3001**

Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : ----

Telephone : +61-3-8549 9630

Project : 31350060803

Date Samples Received : 18-Jan-2018

Order number : ----

Date Analysis Commenced : 22-Feb-2018

C-O-C number : ----

Issue Date : 27-Feb-2018

Sampler : ----

Site : ----

Quote number : EN/005/17

No. of samples received : 8

No. of samples analysed : 8



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

Dilani Fernando

Senior Inorganic Chemist

Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1450513)									
EM1803435-001	NEL-BH125_0.4	EA055: Moisture Content	----	1	%	12.1	12.3	1.31	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1450269)									
EM1803435-001	NEL-BH125_0.4	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	25	20	18.6	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	14	11	23.6	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	9	25.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	25	21	18.3	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	38	33	13.3	No Limit		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1450268)									
EM1803435-001	NEL-BH125_0.4	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1452647)									
EM1803317-008	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1803433-001	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EG005C: Leachable Metals by ICPAES (QC Lot: 1456066)									
EB1804715-001	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	0.3	0.3	0.00	No Limit
EM1803436-032	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	1.2	1.2	0.00	0% - 50%



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1450269)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	85.5	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.0	85	109
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	87.0	83	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	83.3	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	81.4	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	88.2	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	85.6	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	100.0	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	94.6	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	82.5	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1450268)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.7	77	104

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1452647)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	96.3	88	113
EG005C: Leachable Metals by ICPAES (QCLot: 1456066)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	99.3	88	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					MS	Low	High
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number				
EG005T: Total Metals by ICP-AES (QCLot: 1450269)							
EM1803435-002	NEL-BH125_0.75	EG005T: Arsenic	7440-38-2	50 mg/kg	102	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	91.1	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	94.6	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	117	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	101	76	124

Page : 4 of 4
 Work Order : EM1803435 Amendment 2
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1450269) - continued							
EM1803435-002	NEL-BH125_0.75	EG005T: Molybdenum	7439-98-7	50 mg/kg	79.5	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	91.0	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	82.5	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	108	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1450268)							
EM1803435-002	NEL-BH125_0.75	EG035T: Mercury	7439-97-6	5 mg/kg	91.5	76	116

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1452647)							
EM1803317-013	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	94.2	86	118
EG005C: Leachable Metals by ICPAES (QCLot: 1456066)							
EB1804715-003	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	96.0	86	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1803435**

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Amendment : **2**

Client : **GHD PTY LTD**
 Contact : **MR DAVID QUINN**
 Project : **31350060803**
 Site : ----
 Sampler : ----
 Order number : ----

Laboratory : Environmental Division Melbourne
 Telephone : +61-3-8549 9630
 Date Samples Received : 18-Jan-2018
 Issue Date : 27-Feb-2018
 No. of samples received : 8
 No. of samples analysed : 8

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank** value outliers occur.
- **NO Duplicate** outliers occur.
- **NO Laboratory Control** outliers occur.
- **NO Matrix Spike** outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
NEL-BH125_0.4, NEL-BH125_1.0, NEL-BH126_0.3	NEL-BH125_0.75, NEL-BH125_1.5,	----	----	----	22-Feb-2018	31-Jan-2018	22
Soil Glass Jar - Unpreserved							
NEL-BH125_3.0		----	----	----	22-Feb-2018	06-Feb-2018	16
Soil Glass Jar - Unpreserved							
NEL-BH128A_0.23,	NEL-BH128A_1.2	----	----	----	22-Feb-2018	13-Feb-2018	9
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
NEL-BH125_0.4, NEL-BH125_1.0, NEL-BH126_0.3	NEL-BH125_0.75, NEL-BH125_1.5,	22-Feb-2018	14-Feb-2018	8	23-Feb-2018	14-Feb-2018	9
Soil Glass Jar - Unpreserved							
NEL-BH125_3.0		22-Feb-2018	20-Feb-2018	2	23-Feb-2018	20-Feb-2018	3

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055) NEL-BH125_0.4, NEL-BH125_1.0, NEL-BH126_0.3		NEL-BH125_0.75, NEL-BH125_1.5,	17-Jan-2018	----	----	22-Feb-2018	31-Jan-2018	✖
Soil Glass Jar - Unpreserved (EA055) NEL-BH125_3.0			23-Jan-2018	----	----	22-Feb-2018	06-Feb-2018	✖
Soil Glass Jar - Unpreserved (EA055) NEL-BH128A_0.23,		NEL-BH128A_1.2	30-Jan-2018	----	----	22-Feb-2018	13-Feb-2018	✖



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH125_0.4, NEL-BH125_1.0, NEL-BH126_0.3	NEL-BH125_0.75, NEL-BH125_1.5,	17-Jan-2018	22-Feb-2018	16-Jul-2018	✓	22-Feb-2018	16-Jul-2018	✓
Soil Glass Jar - Unpreserved (EG005T) NEL-BH125_3.0		23-Jan-2018	22-Feb-2018	22-Jul-2018	✓	22-Feb-2018	22-Jul-2018	✓
Soil Glass Jar - Unpreserved (EG005T) NEL-BH128A_0.23,	NEL-BH128A_1.2	30-Jan-2018	22-Feb-2018	29-Jul-2018	✓	22-Feb-2018	29-Jul-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH125_0.4, NEL-BH125_1.0, NEL-BH126_0.3	NEL-BH125_0.75, NEL-BH125_1.5,	17-Jan-2018	22-Feb-2018	14-Feb-2018	✗	23-Feb-2018	14-Feb-2018	✗
Soil Glass Jar - Unpreserved (EG035T) NEL-BH125_3.0		23-Jan-2018	22-Feb-2018	20-Feb-2018	✗	23-Feb-2018	20-Feb-2018	✗
Soil Glass Jar - Unpreserved (EG035T) NEL-BH128A_0.23,	NEL-BH128A_1.2	30-Jan-2018	22-Feb-2018	27-Feb-2018	✓	23-Feb-2018	27-Feb-2018	✓
EN60: ASLP Leaching Procedure								
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH125_0.4,	NEL-BH126_0.3	17-Jan-2018	23-Feb-2018	16-Jul-2018	✓	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH128A_0.23		30-Jan-2018	23-Feb-2018	29-Jul-2018	✓	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG005C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH125_0.75,	NEL-BH125_1.0	17-Jan-2018	23-Feb-2018	16-Jul-2018	✔	23-Feb-2018	16-Jul-2018	✔
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH125_0.4, NEL-BH128A_0.23	NEL-BH126_0.3,	23-Feb-2018	26-Feb-2018	22-Aug-2018	✔	26-Feb-2018	22-Aug-2018	✔
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH128A_1.2		30-Jan-2018	23-Feb-2018	29-Jul-2018	✔	23-Feb-2018	29-Jul-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	4	29	13.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	* EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
Hot Block Digest for metals in soils sediments and sludges	* EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

CERTIFICATE OF ANALYSIS

Work Order : EM1803587 Amendment : 1 Client : GHD PTY LTD Contact : MR DAVID QUINN Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 Telephone : ---- Project : 31350060803 Order number : ---- C-O-C number : ---- Sampler : MD, SH Site : ---- Quote number : ME/124/18 - North East Link No. of samples received : 9 No. of samples analysed : 9	Page : 1 of 16 Laboratory : Environmental Division Melbourne Contact : Shirley LeCornu Address : 4 Westall Rd Springvale VIC Australia 3171 Telephone : +61-3-8549 9630 Date Samples Received : 23-Feb-2018 15:50 Date Analysis Commenced : 26-Feb-2018 Issue Date : 20-Mar-2018 09:21
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Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG048G: EM1803533 #1, matrix spike failed due to sample matrix interferences.
- pH analysis is done under non-stirring condition.
- Amendment (20/03/2018): This report has been amended to re-link the IWRG Classification reports. All analysis results are as per the previous report
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH137_0.1m	NEL-BH137_0.7m	NEL-BH137_1.2m	NEL-BH137_1.5m	QC1000
Client sampling date / time					22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EM1803587-001	EM1803587-002	EM1803587-003	EM1803587-004	EM1803587-005
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.8	5.8	6.2	6.4	7.3
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		6.1	10.5	20.5	31.3	5.5
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	<5	<5	<5	16
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		13	<5	9	13	14
Lead	7439-92-1	5	mg/kg		<5	7	7	10	<5
Molybdenum	7439-98-7	2	mg/kg		<2	<2	6	<2	<2
Nickel	7440-02-0	2	mg/kg		14	4	12	22	14
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		34	27	9	15	37
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		510	60	250	300	660
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH137_0.1m	NEL-BH137_0.7m	NEL-BH137_1.2m	NEL-BH137_1.5m	QC1000
Client sampling date / time					22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EM1803587-001	EM1803587-002	EM1803587-003	EM1803587-004	EM1803587-005
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH137_0.1m	NEL-BH137_0.7m	NEL-BH137_1.2m	NEL-BH137_1.5m	QC1000
Client sampling date / time				22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00	
Compound	CAS Number	LOR	Unit	EM1803587-001	EM1803587-002	EM1803587-003	EM1803587-004	EM1803587-005	
				Result	Result	Result	Result	Result	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH137_0.1m	NEL-BH137_0.7m	NEL-BH137_1.2m	NEL-BH137_1.5m	QC1000
Client sampling date / time				22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00
Compound	CAS Number	LOR	Unit	EM1803587-001	EM1803587-002	EM1803587-003	EM1803587-004	EM1803587-005
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH137_0.1m	NEL-BH137_0.7m	NEL-BH137_1.2m	NEL-BH137_1.5m	QC1000
Client sampling date / time					22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00	22-Feb-2018 00:00
Compound	CAS Number	LOR	Unit		EM1803587-001	EM1803587-002	EM1803587-003	EM1803587-004	EM1803587-005
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		113	112	119	120	115
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		118	85.0	91.9	81.8	87.6
Toluene-D8	2037-26-5	0.1	%		117	81.0	82.6	78.2	84.1
4-Bromofluorobenzene	460-00-4	0.1	%		108	79.7	82.2	78.7	79.5
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		96.2	101	91.6	100	103
2-Chlorophenol-D4	93951-73-6	0.025	%		79.4	85.6	73.8	83.0	86.4
2,4,6-Tribromophenol	118-79-6	0.025	%		92.6	105	102	109	103
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		104	108	90.1	104	112
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		91.0	94.4	64.1	71.8	98.6
2-Fluorobiphenyl	321-60-8	0.025	%		105	108	96.2	108	111
Anthracene-d10	1719-06-8	0.025	%		104	108	105	111	112
4-Terphenyl-d14	1718-51-0	0.025	%		109	111	109	116	116



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC2000	NEL-BH123_0.1m	----	----	----
Client sampling date / time					22-Feb-2018 00:00	22-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1803587-006	EM1803587-009	-----	-----	-----
				Result	Result		----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.6	7.6	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		6.1	8.9	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		13	31	----	----	----
Lead	7439-92-1	5	mg/kg		<5	<5	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		14	81	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		34	40	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		670	180	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC2000	NEL-BH123_0.1m	----	----	----
Client sampling date / time					22-Feb-2018 00:00	22-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1803587-006	EM1803587-009	-----	-----	-----
					Result	Result	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC2000	NEL-BH123_0.1m	----	----	----
Client sampling date / time					22-Feb-2018 00:00	22-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1803587-006	EM1803587-009	-----	-----	-----
					Result	Result	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				QC2000	NEL-BH123_0.1m	----	----	----
Client sampling date / time				22-Feb-2018 00:00	22-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1803587-006	EM1803587-009	-----	-----	-----
				Result	Result	----	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC2000	NEL-BH123_0.1m	----	----	----
Client sampling date / time					22-Feb-2018 00:00	22-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1803587-006	EM1803587-009	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		120	119	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		105	88.2	----	----	----
Toluene-D8	2037-26-5	0.1	%		94.9	79.4	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		89.7	79.8	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		99.3	96.5	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		82.8	82.2	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		103	103	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		107	108	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		92.4	92.3	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		107	106	----	----	----
Anthracene-d10	1719-06-8	0.025	%		110	105	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		114	108	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB100	RB100	----	----	----
Client sampling date / time				22-Feb-2018 00:00	22-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1803587-007	EM1803587-008	-----	-----	-----
				Result	Result	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	----	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	----	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	----	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	----	<0.005	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	----	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	----	<0.01	----	----	----
Silver	7440-22-4	0.001	mg/L	----	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L	----	<0.001	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	----	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	----	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	----	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	----	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	----	<1.0	----	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	----	<1.0	----	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	----	<1.0	----	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	----	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	----	<1.0	----	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	----	<1.0	----	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	----	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	----	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				TB100	RB100	----	----	----
Client sampling date / time				22-Feb-2018 00:00	22-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1803587-007	EM1803587-008	-----	-----	-----
				Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	1.0	µg/L	----	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	----	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	----	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	----	<1.0	----	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	----	<1.0	----	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	----	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L	----	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	----	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB100	RB100	----	----	----
Client sampling date / time					22-Feb-2018 00:00	22-Feb-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1803587-007	EM1803587-008	-----	-----	-----
					Result	Result	----	----	----
EP080: BTEXN - Continued									
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	35.6	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	79.2	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	70.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	86.1	----	----	----
Anthracene-d10	1719-06-8	1.0	%		----	91.6	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	101	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		98.6	95.9	----	----	----
Toluene-D8	2037-26-5	2	%		90.7	82.0	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		99.3	92.8	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141
Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

Page 1 of 1

GHD



Melbourne Office Address

180 Lonsdale Street, Melbourne 3000

Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

Quote # / GHD Reference

ME/124/18

Job Number 2135006/0803		GHD Contact		Laboratory: ALS SPRINGVALE	
Project North East Link				Address:	
GHD Project Manager		GHD Contact David Quinn		Laboratory Contact: SHIRLEY LACORNU	
GHD PM email David.Quinn@ghd.com		GHD Contact email		Container	
				Analyses Required	
Sample ID	Date	Time	Composite Sample	Sample Matrix	Container
1 NEL-BH137-0.1m	22/02	Am	/	S	J 1 250 X
2 " " -0.7m	"	"	/	S	J 1 " X
3 " " -1.2m	"	"	/	S	J 1 " X
4 " " -1.5m	"	"	/	S	J 1 " X
5 QC1000	"	"	/	S	J 1 " X
6 QC2000	"	"	/	S	J 1 " X
7 TB100	"	"	/	W	P 1 X
8 RB100	"	"	/	W	P 6 X
9 NEL-BH23-0.1m	22/02	PM	/	S	J 1 250 X

COURIER AND LABORATORY INSTRUCTIONS:

Sign white copy on receipt and release of samples.
Samples are to be delivered to the Laboratory Address.
On receipt of samples, the laboratory contact
to sign white copy and fax/email to GHD Contact.
On completion of analyses please return white
copy with results.

Pink copy is returned to the sampler once the
courier has signed for the samples.
E-mail results to the GHD Project Manager
and GHD Contact with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

SAMPLE COMMENTS

Environmental Division

Melbourne

Work Order Reference

EM1803587



Telephone : - 61-3-8543 9600

TOTAL NUMBER OF SAMPLES:	14	GENERAL COMMENTS: cc to Mark Davidson (Aecom) Nazim Kosi (Aecom)
TOTAL NUMBER OF ESQIES:	1	
SAMPLES/ESKY CHILLED? Y/N	Y	

CUSTODY DETAILS:	
SAMPLER	Name: Scott Hillard / Mark Davidson Date/Time Received: PM 22/02/18 Date/Time Relinquished: 23/02/18
GHD SERVICE CENTRE	
COURIER	
LABORATORY	23/2 15:50

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 11 January 2018 2:35 PM
To: Shirley LeCornu
Subject: RE: EM1801198 - GHD - 31/35006/0803

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Shirley,

There will be some more samples coming through so we'll hold off analysing at the moment, so they can be done in a batch.

The analysis will be VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Thanks,

David Quinn
Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

Please consider our environment before printing this email

From: Shirley LeCornu [<mailto:shirley.lecornu@alsglobal.com>]
Sent: Thursday, 11 January 2018 9:07 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1801198 - GHD - 31/35006/0803

Hi David

Can you please let me know analysis required for the samples we received yesterday. COC attached.

Thanks

Shirley

Shirley LeCornu
Client Services Officer – Springvale
Environmental



T +61 3 8549 9600 **D** +61 3 8549 9630
F +61 3 8549 9626
Shirley.lecornu@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

We are keen for your feedback! [Please click here for your 1 question survey](#)

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1803587

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060803</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : ----</p> <p>Sampler : MD, SH</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9601</p> <p>Page : 1 of 3</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Dates

Date Samples Received : 23-Feb-2018 15:50	Issue Date : 26-Feb-2018
Client Requested Due : 02-Mar-2018	Scheduled Reporting Date : 02-Mar-2018
Date	

Delivery Details

Mode of Delivery : Carrier	Security Seal : Intact.
No. of coolers/boxes : 1	Temperature : 9.6°C - Ice present
Receipt Detail :	No. of samples received / analysed : 9 / 9

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Asbestos Identification in Soils : EA200		
NEL-BH137_0.1m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH137_0.7m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH137_1.2m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH137_1.5m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
QC1000	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
QC2000	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH123_0.1m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200 Asbestos Identification in Soils -	SOIL - P-16 IWRG 621
EM1803587-001	22-Feb-2018 00:00	NEL-BH137_0.1m	✓	✓	✓
EM1803587-002	22-Feb-2018 00:00	NEL-BH137_0.7m	✓	✓	✓
EM1803587-003	22-Feb-2018 00:00	NEL-BH137_1.2m	✓	✓	✓
EM1803587-004	22-Feb-2018 00:00	NEL-BH137_1.5m	✓	✓	✓
EM1803587-005	22-Feb-2018 00:00	QC1000	✓	✓	✓
EM1803587-006	22-Feb-2018 00:00	QC2000	✓	✓	✓
EM1803587-009	22-Feb-2018 00:00	NEL-BH123_0.1m	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020T Total Recoverable Metals by ICPMS (including	WATER - W-02T 8 metals (Total)	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
EM1803587-007	22-Feb-2018 00:00	TB100			✓	
EM1803587-008	22-Feb-2018 00:00	RB100	✓	✓		✓

[illegible]

QUALITY CONTROL REPORT

Work Order : **EM1803587**

Page : 1 of 18

Amendment : **1**

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : MR DAVID QUINN

Contact : Shirley LeCornu

Address : LEVEL 8, 180 LONSDALE ST
MELBOURNE VIC, AUSTRALIA 3001

Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : ----

Telephone : +61-3-8549 9630

Project : 31350060803

Date Samples Received : 23-Feb-2018

Order number : ----

Date Analysis Commenced : 26-Feb-2018

C-O-C number : ----

Issue Date : 20-Mar-2018

Sampler : MD, SH

Site : ----

Quote number : ME/124/18 - North East Link

No. of samples received : 9

No. of samples analysed : 9



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1458575)									
EM1803583-003	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.7	7.8	1.29	0% - 20%
EM1803587-006	QC2000	EA001: pH (CaCl2)	----	0.1	pH Unit	7.6	7.6	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1458775)									
EM1803561-042	Anonymous	EA055: Moisture Content	----	1	%	12.8	12.6	2.08	0% - 50%
EM1803585-002	Anonymous	EA055: Moisture Content	----	1	%	9.0	9.6	6.38	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1458760)									
EM1803587-001	NEL-BH137_0.1m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	14	13	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	13	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	34	32	4.69	No Limit		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1458759)									
EM1803587-001	NEL-BH137_0.1m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1458717)									
EM1803477-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1803583-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1459594)									
EM1803470-043	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1803583-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1459595)									
EM1803587-009	NEL-BH123_0.1m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1803638-003	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1458572)									
EM1803587-001	NEL-BH137_0.1m	EK040T: Fluoride	16984-48-8	40	mg/kg	510	480	6.45	0% - 50%
EM1803635-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	110	120	9.01	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1458568)									
EM1803587-001	NEL-BH137_0.1m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1803635-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.2	<0.2	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1456496)									
EM1803556-002	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1803611-001	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1456496)									
EM1803556-002	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1803611-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1456496)									
EM1803556-002	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1456496) - continued									
EM1803556-002	Anonymous	EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1803611-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1458566)							
EM1803587-001	NEL-BH137_0.1m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1803635-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.07	<0.07	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1458566) - continued									
EM1803635-002	Anonymous	EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.14	<0.14	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1458566)									
EM1803587-001	NEL-BH137_0.1m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1803635-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<6	<6	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1458566)									
EM1803587-001	NEL-BH137_0.1m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1458566) - continued											
EM1803587-001	NEL-BH137_0.1m	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EM1803635-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	0.8	0.9	15.5	No Limit		
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	0.8	1.0	19.0	No Limit		
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	0.5	0.00	No Limit		
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	1.0	1.2	14.0	No Limit		
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.5	0.6	0.00	No Limit		
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP075I: Organochlorine Pesticides (QC Lot: 1458566)									
		EM1803587-001	NEL-BH137_0.1m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
EP075-EM: Hexachlorobenzene (HCB)	118-74-1			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: beta-BHC	319-85-7			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: gamma-BHC	58-89-9			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: delta-BHC	319-86-8			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Heptachlor	76-44-8			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Aldrin	309-00-2			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Heptachlor epoxide	1024-57-3			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: cis-Chlordane	5103-71-9			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: trans-Chlordane	5103-74-2			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Endosulfan 1	959-98-8			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Dieldrin	60-57-1			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Endrin aldehyde	7421-93-4			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Endrin	72-20-8			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Endosulfan 2	33213-65-9			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Endosulfan sulfate	1031-07-8			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Methoxyvchlor	72-43-5			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1458566) - continued									
EM1803587-001	NEL-BH137_0.1m	EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1803635-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1456496)									
EM1803556-002	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1803611-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1458567)									
EM1803587-001	NEL-BH137_0.1m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1803635-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	120	18.5	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	120	15.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1456496)									
EM1803556-002	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1803611-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1458567)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1458567) - continued									
EM1803587-001	NEL-BH137_0.1m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1803635-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	160	200	24.5	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1458588)									
EM1803556-010	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.065	0.065	0.00	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1803588-005	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.001	90.4	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.009	52.6	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 1458589)									
EM1803587-008	RB100	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1464516)									
EM1803359-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1803661-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 1456536)									
EM1803561-047	Anonymous	EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Phenolic Compounds (QC Lot: 1456536) - continued									
EM1803561-047	Anonymous	EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1456536)									
EM1803561-047	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	0.00	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1456535)									
EM1803561-047	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1458162)									
EM1803561-051	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1803588-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1456535)									
EM1803561-047	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1458162)									
EM1803561-051	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit

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 Work Order : EM1803587 Amendment 1
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1458162) - continued									
EM1803588-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1458162)									
EM1803561-051	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1803588-002	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)		
		LCS	Low	High	
Result					
<5	21.7 mg/kg	96.4	79	113	
<1	4.64 mg/kg	89.6	85	109	
<5	32 mg/kg	93.9	78	108	
<5	40 mg/kg	91.3	78	106	
<2	7.9 mg/kg	96.2	86	112	
<2	55 mg/kg	97.8	82	111	
<5	5.37 mg/kg	101	93	109	
<2	2.1 mg/kg	80.6	80	108	
<5	5.2 mg/kg	89.5	88	116	
<5	60.8 mg/kg	96.8	82	111	
<0.1	2.57 mg/kg	90.3	77	104	
<0.5	40 mg/kg	96.5	80	120	
<1	20 mg/kg	81.1	80	110	
<1	20 mg/kg	80.9	80	110	
<40	400 mg/kg	100	77	106	
<0.1	1 mg/kg	110	63	118	
<0.2	2.1 mg/kg	93.6	74	118	
<0.5	2.1 mg/kg	92.6	70	124	
<0.5	2.1 mg/kg	90.5	71	122	
<0.5	4.2 mg/kg	86.7	70	118	
<0.5	2.1 mg/kg	92.0	76	116	
<0.5	2.1 mg/kg	90.0	74	114	
<1	0.6 mg/kg	93.2	77	111	



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1456496) - continued								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	97.3	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	87.1	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	94.6	68	107
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	94.7	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	89.8	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	91.6	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	97.4	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	92.2	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	93.8	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	91.3	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	98.7	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	90.8	64	124
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	94.6	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	94.4	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	79.7	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	91.6	73	117
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	91.4	69	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	91.4	75	114
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	84.8	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1458566)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	91.8	54	122
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	90.6	58	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	95.4	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	84.7	62	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	97.6	53	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	86.7	60	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	95.5	56	118
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5	0.05	mg/kg	<0.05	4 mg/kg	97.1	54	125
	8-90-2							
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	83.2	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1458566)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	82.2	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	96.4	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	94.1	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	91.5	53	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	99.4	43	120
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	53.2	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	75.9	59	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	56.7	47	125



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1458566) - continued								
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	77.4	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	71.4	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1458566)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	94.4	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	115	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	102	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	98.4	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	101	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	67.0	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	98.2	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	98.8	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	95.3	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	98.4	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	106	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	103	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	103	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	102	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	104	55	137
EP075I: Organochlorine Pesticides (QCLot: 1458566)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	93.5	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	97.5	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	93.2	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	94.1	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	95.6	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	98.3	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	96.8	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	100	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	98.4	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	98.4	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	95.0	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	94.2	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	96.4	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	74.7	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	92.7	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	96.6	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	99.6	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	97.9	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	95.2	59	134



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075I: Organochlorine Pesticides (QCLot: 1458566) - continued								
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	94.7	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1456496)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	95.6	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1458567)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	93.0	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	97.8	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	93.4	77	116
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1456496)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	93.6	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1458567)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	93.3	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	97.3	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	91.7	68	124

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1458588)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	90	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	99.9	86	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.4	87	109
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.9	87	108
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.3	88	109
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	102	88	114
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.6	87	111
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	91.9	85	113
EG020A-T: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	99.3	88	113
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	105	87	113
EG020T: Total Metals by ICP-MS (QCLot: 1458589)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	104	78	129
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1464516)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	87.1	81	114
EP075(SIM)A: Phenolic Compounds (QCLot: 1456536)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	43.1	20	49
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	89.3	46	103
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	82.2	43	98

Method Blank (MB) Report

Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
	LCS	Low	High

[illegible]

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1458760)							
EM1803587-002	NEL-BH137_0.7m	EG005T: Arsenic	7440-38-2	50 mg/kg	81.7	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.0	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	98.3	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	84.6	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	84.0	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	91.1	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	83.4	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	106	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1458759)							
EM1803587-002	NEL-BH137_0.7m	EG035T: Mercury	7439-97-6	5 mg/kg	91.7	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1458717)							
EM1803533-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	# 3.75	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1459594)							
EM1803470-044	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	80.6	77	113
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1459595)							
EM1803611-001	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	84.1	77	113
EK040T: Fluoride Total (QCLot: 1458572)							
EM1803587-002	NEL-BH137_0.7m	EK040T: Fluoride	16984-48-8	400 mg/kg	104	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1458568)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1458568) - continued							
EM1803587-004	NEL-BH137_1.5m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	114	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1456496)							
EM1803556-003	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	73.8	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	74.6	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1456496)							
EM1803556-003	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	67.5	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	72.6	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	79.2	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1458566)							
EM1803587-002	NEL-BH137_0.7m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	88.3	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	87.9	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	66.7	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1458566)							
EM1803587-002	NEL-BH137_0.7m	EP075-EM: Phenol	108-95-2	1 mg/kg	80.7	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	82.3	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1458566)							
EM1803587-002	NEL-BH137_0.7m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	90.7	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	99.6	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1456496)							
EM1803556-003	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	65.8	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1458567)							
EM1803587-003	NEL-BH137_1.2m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	96.2	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	101	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	96.9	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1456496)							
EM1803556-003	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	63.7	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1458567)							
EM1803587-003	NEL-BH137_1.2m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	96.2	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	100	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	93.8	44	126

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1458588)							
EM1803556-010	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	105	82	118



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1458588) - continued							
EM1803556-010	Anonymous	EG020A-T: Cadmium	7440-43-9	0.25 mg/L	108	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	92.0	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	99.8	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	97.0	83	121
		EG020A-T: Nickel	7440-02-0	1 mg/L	104	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	102	74	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1464516)							
EM1803359-002	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	93.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1456535)							
EM1803602-009	Anonymous	EP071: C10 - C14 Fraction	----	3368 µg/L	70.1	50	130
		EP071: C15 - C28 Fraction	----	14735 µg/L	69.0	54	136
		EP071: C29 - C36 Fraction	----	7856 µg/L	64.2	50	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1458162)							
EM1803561-047	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	72.3	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1456535)							
EM1803602-009	Anonymous	EP071: >C10 - C16 Fraction	----	5225 µg/L	68.3	50	128
		EP071: >C16 - C34 Fraction	----	19994 µg/L	65.5	50	150
		EP071: >C34 - C40 Fraction	----	1449 µg/L	70.2	51	159
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1458162)							
EM1803561-047	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	68.8	44	122
EP080: BTEXN (QCLot: 1458162)							
EM1803561-047	Anonymous	EP080: Benzene	71-43-2	20 µg/L	91.5	68	130
		EP080: Toluene	108-88-3	20 µg/L	94.2	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1803587**

Page : 1 of 11

Amendment : **1**

Client : **GHD PTY LTD**
 Contact : **MR DAVID QUINN**
 Project : **31350060803**
 Site : **----**
 Sampler : **MD, SH**
 Order number : **----**

Laboratory : **Environmental Division Melbourne**
 Telephone : **+61-3-8549 9630**
 Date Samples Received : **23-Feb-2018**
 Issue Date : **20-Mar-2018**
 No. of samples received : **9**
 No. of samples analysed : **9**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG048: Hexavalent Chromium (Alkaline Digest)	EM1803533--001	Anonymous	Hexavalent Chromium	18540-29-9	3.75 %	58-114%	Recovery less than lower data quality objective

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Matrix: CORE					
Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Control Samples (LCS)					
Hexavalent Chromium by Alkaline Digestion and DA Finish	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)		22-Feb-2018	27-Feb-2018	01-Mar-2018	✔	27-Feb-2018	27-Feb-2018	✔
NEL-BH137_0.1m, NEL-BH137_0.7m,								
NEL-BH137_1.2m, NEL-BH137_1.5m,								
QC1000, QC2000,								
NEL-BH123_0.1m								
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		22-Feb-2018	----	----	----	27-Feb-2018	08-Mar-2018	✔
NEL-BH137_0.1m, NEL-BH137_0.7m,								
NEL-BH137_1.2m, NEL-BH137_1.5m,								
QC1000, QC2000,								
NEL-BH123_0.1m								



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	21-Aug-2018	✓	27-Feb-2018	21-Aug-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	22-Mar-2018	✓	28-Feb-2018	22-Mar-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	22-Mar-2018	✓	27-Feb-2018	06-Mar-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	13-Mar-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	22-Mar-2018	✓	28-Feb-2018	22-Mar-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	08-Apr-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	26-Feb-2018	01-Mar-2018	✓	27-Feb-2018	01-Mar-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	26-Feb-2018	01-Mar-2018	✓	27-Feb-2018	01-Mar-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	26-Feb-2018	01-Mar-2018	✓	27-Feb-2018	01-Mar-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	08-Apr-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	08-Apr-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	08-Apr-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	08-Apr-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	26-Feb-2018	01-Mar-2018	✔	27-Feb-2018	01-Mar-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	08-Mar-2018	✔	28-Feb-2018	08-Apr-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	26-Feb-2018	01-Mar-2018	✔	27-Feb-2018	01-Mar-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH137_0.1m, NEL-BH137_1.2m, QC1000, NEL-BH123_0.1m	NEL-BH137_0.7m, NEL-BH137_1.5m, QC2000,	22-Feb-2018	27-Feb-2018	08-Mar-2018	✔	28-Feb-2018	08-Apr-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-T) RB100	22-Feb-2018	27-Feb-2018	21-Aug-2018	✓	27-Feb-2018	21-Aug-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) RB100	22-Feb-2018	----	----	----	01-Mar-2018	22-Mar-2018	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB100	22-Feb-2018	26-Feb-2018	01-Mar-2018	✓	27-Feb-2018	07-Apr-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB100	22-Feb-2018	26-Feb-2018	01-Mar-2018	✓	27-Feb-2018	07-Apr-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) RB100	22-Feb-2018	26-Feb-2018	01-Mar-2018	✓	27-Feb-2018	07-Apr-2018	✓
Amber TOC Vial - Sulfuric Acid (EP080) RB100	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	08-Mar-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB100	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	08-Mar-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) RB100	22-Feb-2018	26-Feb-2018	01-Mar-2018	✓	27-Feb-2018	07-Apr-2018	✓
Amber TOC Vial - Sulfuric Acid (EP080) RB100	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	08-Mar-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB100	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	08-Mar-2018	✓
EP080: BTEXN							
Amber TOC Vial - Sulfuric Acid (EP080) RB100	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	08-Mar-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB100	22-Feb-2018	27-Feb-2018	08-Mar-2018	✓	28-Feb-2018	08-Mar-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1803702**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **3**
No. of samples analysed : **3**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 19-Feb-2018 16:55
Date Analysis Commenced : 28-Feb-2018
Issue Date : 05-Mar-2018 08:57



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1803248.



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				NEL-BH108_0.2m	NEL-BH108_0.7m	NEL-BH108_1.2m	----	----
Client sampling date / time				19-Feb-2018 00:00	19-Feb-2018 00:00	19-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1803702-001	EM1803702-002	EM1803702-003	-----	-----
				Result	Result	Result	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	----	----	<0.1	----	----
Nickel	7440-02-0	0.1	mg/L	----	<0.1	<0.1	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.2	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH108_0.2m	NEL-BH108_0.7m	NEL-BH108_1.2m	----	----
Client sampling date / time				19-Feb-2018 00:00	19-Feb-2018 00:00	19-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1803702-001	EM1803702-002	EM1803702-003	-----	-----
				Result	Result	Result	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	6.7	6.7	8.3	----	----
After HCl pH	----	0.1	pH Unit	1.4	1.4	1.4	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	----	----
Final pH	----	0.1	pH Unit	4.9	5.0	5.0	----	----

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Tuesday, 27 February 2018 4:34 PM
To: Shirley LeCornu
Cc: nazuha.rosli@aecom.com
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1803248 | Overall Description: North East Link

Hi Shirley,

Can we also please do leachability tests for:
2 - NEL-BH108_0.7m for lead and nickel
3 - NEL-BH108_1.2m for nickel

Thanks
David Quinn
Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD
T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
Water | Energy & Resources | Environment | Property & Buildings | Transportation

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the *Inside Waste Consultants Review*

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We pay respect to their continuing culture and Elders past, present and emerging.
[Click here](#) to learn about our Reconciliation Action Plan.

Environmental Division
Melbourne
Work Order Reference
EM1803702



Telephone : + 61-3-8549 9600

From: David Quinn [<mailto:David.Quinn@ghd.com>]
Sent: Tuesday, 27 February 2018 4:05 PM
To: shirley.lecornu@alsglobal.com
Cc: Rosli, Nazuha
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1803248 | Overall Description: North East Link

At standard TAT. Sorry, I always forget to specify.

From: David Quinn
Sent: Tuesday, 27 February 2018 4:04 PM
To: Shirley Lecornu (InTouch) <shirley.lecornu@alsglobal.com>
Cc: Nazuha Rosli (InTouch) <nazuha.rosli@aecom.com>
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1803248 | Overall Description: North East Link

Hi Shirley,

Can we please get leachability tests done for fluoride on the below samples:

Summary of Thresholds Reached or Exceeded

EPA Victoria Publication MVRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds: Fill Material

Client Sample ID	ALS Sample ID	Compound	Method	LOR	Limit	Result
1- NEL-BH108_0.2m	EM1803248-001	Fluoride	EK04BT	40	< 450 mg/kg	540 mg/kg
2- NEL-BH108_0.7m	EM1803248-002	Fluoride	EK04BT	40	< 450 mg/kg	700 mg/kg
3- NEL-BH108_1.2m	EM1803248-003	Fluoride	EK04BT	40	< 450 mg/kg	640 mg/kg

Thanks,
David Quinn
Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD
T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
Water | Energy & Resources | Environment | Property & Buildings | Transportation

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the *Inside Waste Consultants Review*

QUALITY CONTROL REPORT

Work Order	: EM1803702	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 19-Feb-2018
Order number	: ----	Date Analysis Commenced	: 28-Feb-2018
C-O-C number	: ----	Issue Date	: 05-Mar-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1464846)									
EM1803260-001	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	14.3	14.4	0.00	0% - 20%
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1803702-002	NEL-BH108_0.7m	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1467402)									
EM1803702-002	NEL-BH108_0.7m	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.00	No Limit
EM1803760-009	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit		Result		LCS	Low
EG005C: Leachable Metals by ICPAES (QCLot: 1464846)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	102	88	113
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	101	86	111
EK040P: Fluoride by PC Titrator (QCLot: 1467402)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	102	85	112

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1464846)							
EM1803268-007	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	# Not Determined	86	118
		EG005C: Nickel	7440-02-0	1 mg/L	95.0	88	116
EK040P: Fluoride by PC Titrator (QCLot: 1467402)							
EM1803702-003	NEL-BH108_1.2m	EK040P: Fluoride	16984-48-8	5 mg/L	104	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1803702**

Page : 1 of 4

Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Project : **31350060803**
Site : ----
Sampler : ----
Order number : ----

Laboratory : Environmental Division Melbourne
Telephone : +61-3-8549 9630
Date Samples Received : 19-Feb-2018
Issue Date : 05-Mar-2018
No. of samples received : 3
No. of samples analysed : 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005C: Leachable Metals by ICPAES	EM1803268--007	Anonymous	Lead	7439-92-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a)							
NEL-BH108_0.2m, NEL-BH108_1.2m	NEL-BH108_0.7m,	19-Feb-2018	28-Feb-2018	18-Aug-2018	✔	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH108_0.7m, NEL-BH108_1.2m	28-Feb-2018	01-Mar-2018	27-Aug-2018	✓	01-Mar-2018	27-Aug-2018	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) NEL-BH108_0.2m, NEL-BH108_1.2m	28-Feb-2018	----	----	----	02-Mar-2018	28-Mar-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	SOIL	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Digestion for Total Recoverable Metals in TCLP Leachate	* EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1803724**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **SCOTT HILLIARD**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **8**
No. of samples analysed : **6**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 27-Feb-2018 15:50
Date Analysis Commenced : 28-Feb-2018
Issue Date : 06-Mar-2018 16:13



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH140_0.2m	NEL-BH140_0.5m	NEL-BH140_1.0m	----	----
Client sampling date / time					27-Feb-2018 00:00	27-Feb-2018 00:00	27-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803724-001	EM1803724-002	EM1803724-003	-----	-----
				Result	Result	Result	Result	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.4	7.1	6.6	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		19.3	10.6	18.7	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Copper	7440-50-8	5	mg/kg		27	<5	9	----	----
Lead	7439-92-1	5	mg/kg		9	<5	12	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg		54	<2	14	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	----	----
Zinc	7440-66-6	5	mg/kg		34	<5	14	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		180	50	230	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH140_0.2m	NEL-BH140_0.5m	NEL-BH140_1.0m	----	----
Client sampling date / time					27-Feb-2018 00:00	27-Feb-2018 00:00	27-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803724-001	EM1803724-002	EM1803724-003	-----	-----
					Result	Result	Result	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ øSum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ øSum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ øSum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH140_0.2m	NEL-BH140_0.5m	NEL-BH140_1.0m	----	----
Client sampling date / time				27-Feb-2018 00:00	27-Feb-2018 00:00	27-Feb-2018 00:00	----	----	
Compound	CAS Number	LOR	Unit	EM1803724-001	EM1803724-002	EM1803724-003	-----	-----	
				Result	Result	Result	----	----	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	----	----	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	----	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	----	----	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	----	----	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	----	----	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	----	----	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	----	----	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	----	----	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	----	----	
^ øSum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	----	----	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	0.5	<0.5	<0.5	----	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	0.6	<0.5	<0.5	----	----	
Pyrene	129-00-0	0.5	mg/kg	0.6	<0.5	<0.5	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	1.2	<0.5	<0.5	----	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.7	<0.5	<0.5	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	0.5	<0.5	<0.5	----	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.7	<0.5	<0.5	----	----	
^ øSum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	4.8	<0.5	<0.5	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.9	<0.5	<0.5	----	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	1.2	0.6	0.6	----	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.4	1.2	1.2	----	----	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH140_0.2m	NEL-BH140_0.5m	NEL-BH140_1.0m	----	----
Client sampling date / time				27-Feb-2018 00:00	27-Feb-2018 00:00	27-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1803724-001	EM1803724-002	EM1803724-003	-----	-----
				Result	Result	Result	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ øSum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ øSum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ øSum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ øChlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ øSum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg	160	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	150	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	310	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH140_0.2m	NEL-BH140_0.5m	NEL-BH140_1.0m	----	----
Client sampling date / time					27-Feb-2018 00:00	27-Feb-2018 00:00	27-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803724-001	EM1803724-002	EM1803724-003	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		270	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		270	<50	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		102	82.8	108	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		93.9	89.0	91.9	----	----
Toluene-D8	2037-26-5	0.1	%		91.1	86.3	92.6	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		82.0	102	87.1	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		57.6	54.6	69.1	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		63.9	60.8	70.2	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		67.6	59.3	63.4	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		74.0	69.1	82.4	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		67.6	60.7	69.5	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		77.7	75.8	88.7	----	----
Anthracene-d10	1719-06-8	0.025	%		99.2	95.2	106	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		104	98.1	109	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB101	TB101	FB101	----	----
Client sampling date / time				27-Feb-2018 00:00	27-Feb-2018 00:00	27-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1803724-005	EM1803724-006	EM1803724-007	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.81	----	5.72	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	----	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	<0.01	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	<0.005	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	----	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	----	<0.004	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	----	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	----	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	----	<5	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	----	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	----	<5	----	----
Methylene chloride	75-09-2	5	µg/L	<5	----	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	----	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	----	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	----	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	----	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	----	<5	----	----
Trichloroethene	79-01-6	5	µg/L	<5	----	<5	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB101	TB101	FB101	----	----
Client sampling date / time					27-Feb-2018 00:00	27-Feb-2018 00:00	27-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803724-005	EM1803724-006	EM1803724-007	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	----	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	----	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	----	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	----	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	----	<5	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	----	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	----	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	----	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	----	<5	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	----	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	----	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	----	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	----	<2	----	----
2,4-Dichlorophenol	120-83-2	2	µg/L		<2	----	<2	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB101	TB101	FB101	----	----
Client sampling date / time				27-Feb-2018 00:00	27-Feb-2018 00:00	27-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1803724-005	EM1803724-006	EM1803724-007	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	----	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	----	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	----	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	----	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	----	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	----	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	----	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	----	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	----	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	----	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	----	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	----	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	----	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	----	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	----	<50	----	----
Dinoseb	88-85-7	50	µg/L	<50	----	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	----	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	----	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	----	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	----	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB101	TB101	FB101	----	----
Client sampling date / time					27-Feb-2018 00:00	27-Feb-2018 00:00	27-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803724-005	EM1803724-006	EM1803724-007	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	----	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	----	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		96.4	----	77.0	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		110	----	105	----	----
Toluene-D8	2037-26-5	5	%		98.5	----	92.7	----	----
4-Bromofluorobenzene	460-00-4	5	%		107	----	104	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		26.9	----	27.7	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		61.5	----	65.0	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		66.4	----	59.4	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		74.2	----	76.8	----	----
Anthracene-d10	1719-06-8	1.0	%		89.3	----	81.5	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		104	----	94.2	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB101	TB101	FB101	----	----
Client sampling date / time					27-Feb-2018 00:00	27-Feb-2018 00:00	27-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803724-005	EM1803724-006	EM1803724-007	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		49.5	----	42.9	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		98.7	----	89.9	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		107	----	96.3	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		106	----	98.9	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		102	----	91.5	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		121	----	120	----	----
Anthracene-d10	1719-06-8	0.25	%		123	----	116	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		112	----	113	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		99.8	95.3	95.7	----	----
Toluene-D8	2037-26-5	2	%		98.7	92.4	92.9	----	----
4-Bromofluorobenzene	460-00-4	2	%		112	104	108	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



Telephone: 613 8687 8000 Fax: 613 8687 8111

ASAP

Quote # / GHD Reference

ME/124/18

Page 1 of 1

Job Number 31/35006/0803		GHD Contact		Laboratory: ALS SPRINGVALE	
Project		GHD Contact David Quinn		Address:	
GHD Project Manager		GHD Contact email David Quinn - Quinn@ghd.com		Laboratory Contact: Shirley LeCornu	
GHD PM email		GHD Contact email		Container	
Sample I.D.		Date		Time	
Composite Sample		Sample Matrix		Type	
S: Soil, S1: Bulk, S2: Water, A: Air, G: Groundwater		V: Soil Jar, B: Bag, V: Vial, G: Glass bottle, P: Plastic bottle		Number	
Volume (mL)		HOLD			
NEL-BH140-0.2m		27/02		AM	
" -0.5m		"		"	
" -1.0m		"		"	
" -1.5m		"		"	
RB101		"		"	
TB101		"		"	
FB101		"		"	
NEL-BH140-3.0		"		PM	
Am 28/2					
TOTAL NUMBER OF SAMPLES:		18/14		GENERAL COMMENTS:	
TOTAL NUMBER OF ESKIES:		1			
SAMPLES/ESKIS CHILLED 2 Y / N		Y			
CUSTODY DETAILS:					
Name		Date/Time Received		Date/Time Relinquished	
SAMPLER		Scott Hilliard		Am 27/02 0430 344 657.	
GHD SERVICE CENTRE				PM 27/02	
COURIER		Andy Shea		PM 27/02	
LABORATORY		Mark (Am) 27/2		1540	

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 11 January 2018 2:35 PM
To: Shirley LeCornu
Subject: RE: EM1801198 - GHD - 31/35006/0803

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Shirley,

There will be some more samples coming through so we'll hold off analysing at the moment, so they can be done in a batch.

The analysis will be VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Thanks,

David Quinn

Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
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From: Shirley LeCornu [<mailto:shirley.lecornu@alsglobal.com>]
Sent: Thursday, 11 January 2018 9:07 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1801198 - GHD - 31/35006/0803

Hi David

Can you please let me know analysis required for the samples we received yesterday. COC attached.

Thanks

Shirley

Shirley LeCornu

Client Services Officer – Springvale
Environmental



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F +61 3 8549 9626

Shirley.lecornu@alsglobal.com

2-4 Westall Rd

Springvale Vic 3171

Australia

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EnviroMail™ 113 - Amoeba Confirmation PCR

EnviroMail™ 112 - Algal Capabilities

EnviroMail™ 111 - Analysis of VOCs by Thermal Desorption Analysis

EnviroMail™ 110 - Identifying Hidden PFAS Chemicals in Environmental Samples and Firefighting Foams

EnviroMail™ 00 - Summary of all EnviroMails™ by Category

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Larissa Burns

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Monday, 5 March 2018 12:08 PM
To: Larissa Burns; Melbourne Enviro Services
Cc: Menon, Venesa; Davidson, Mark (Melbourne); David Quinn (David.Quinn@ghd.com)
Subject: RE: SRN for ALS Workorder : EM1803724 | Your Reference: 31350060803

Hi Larissa,

Please analyse for:

1. NEL-BH140_0.2m = IWRG621
2. NEL-BH140_0.5m = IWRG621
3. NEL-BH140_1.0m = IWRG621
5. RB101 = IWRG621 water equivalent
6. TB101 = Volatile TPH/BTEX
7. FB101 = IWRG621 water equivalent

At standard TAT. Thanks.

Nazuha Rosli

Senior Environmental Engineer
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nazuha.rosli@aecom.com

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From: Larissa Burns [mailto:Larissa.Burns@alsglobal.com]
Sent: Monday, 5 March 2018 11:29 AM
To: Rosli, Nazuha; Melbourne Enviro Services
Cc: Menon, Venesa; Davidson, Mark (Melbourne); David Quinn (David.Quinn@ghd.com)
Subject: RE: SRN for ALS Workorder : EM1803724 | Your Reference: 31350060803

Hi Nazuha,

Shirley is currently on annual leave, however it looks like currently the analysis booked for this batch is:

1. NEL-BH140_0.2m = IWRG621
2. NEL-BH140_0.5m = IWRG621
3. NEL-BH140_1.0m = IWRG621
4. NEL-BH140_1.5m = IWRG621
5. RB101 = IWRG621 water equivalent
6. TB101 = Volatile TPH/BTEX
7. FB101 = IWRG621 water equivalent
8. NEL-BH140_3.0m = IWRG621 (also 1 x asbestos bag NO current analysis).

Reading your below email, just confirming you would like us to cancel analysis for samples:

5. RB101 = IWRG621 water equivalent
8. NEL-BH140_3.0m = IWRG621

Is this correct?

Kind regards,

Larissa Burns

Client Services Officer – Springvale

Environmental



T +61 3 8549 9600 **D** +61 3 8549 9644

F +61 3 8549 9601

larissa.burns@alsglobal.com

2-4 Westall Rd

Springvale Vic 3171

Australia

ATTENTION: ALS Environmental Melbourne will be closed on Monday the 12th of March due to the Labour Day public holiday

We are keen for your feedback! [Please click here for your 1 question survey](#)

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EnviroMail™ 112 – Algal Capabilities

EnviroMail™ 110 – Identifying Hidden PFAS Chemicals in Environmental Samples and Firefighting Foams

EnviroMail™ 00 – Summary of all EnviroMails™ by Category

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From: Rosli, Nazuha [<mailto:nazuha.rosli@aecom.com>]

Sent: Monday, 5 March 2018 8:56 AM

To: Melbourne Enviro Services <MelbourneEnviroSer@alsglobal.com>

Cc: Menon, Venesa <venesa.menon@aecom.com>; Davidson, Mark (Melbourne) <mark.s.davidson@aecom.com>;

David Quinn (David.Quinn@ghd.com) <David.Quinn@ghd.com>

Subject: RE: SRN for ALS Workorder : EM1803724 | Your Reference: 31350060803

Hi Shirley,

Please analyse **IWRG621** for:

1. NEL-BH140_0.2m
2. NEL-BH140_0.5m
3. NEL-BH140_1.0m
4. RB101
7. FB101

TRH/BTEX for TB101

At standard TAT. Thanks.

Nazuha Rosli

Senior Environmental Engineer

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nazuha.rosli@aecom.com

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From: David Quinn [<mailto:David.Quinn@ghd.com>]
Sent: Wednesday, 28 February 2018 1:09 PM
To: Rosli, Nazuha
Subject: FW: SRN for ALS Workorder : EM1803724 | Your Reference: 31350060803

Hi Nazuha,

Just checking that you received the attached SRN and COC for BH140. I'll leave it up to you to follow up with Shirley.

Cheers,

David Quinn
Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
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From: angel-no-reply@alsglobal.com [<mailto:angel-no-reply@alsglobal.com>]
Sent: Wednesday, 28 February 2018 1:01 PM
To: David Quinn <David.Quinn@ghd.com>
Subject: SRN for ALS Workorder : EM1803724 | Your Reference: 31350060803



Deliverables for ALS Workorder EM1803724

Project: 31350060803

Dear DAVID QUINN,

Please find enclosed the following deliverables for **EM1803724**:

- EM1803724_0_SRN_180228130026.pdf
- EM1803724_ESRN_ESDAT_0.Header.xml
- EM1803724_COC.pdf

Report Recipients

- DAVID QUINN
 - EM1803724_0_SRN_180228130026.pdf (Email)
 - EM1803724_ESRN_ESDAT_0.Header.xml (Email)
 - EM1803724_COC.pdf (Email)
- GHD LAB REPORTS
 - EM1803724_0_SRN_180228130026.pdf (Email)
 - EM1803724_ESRN_ESDAT_0.Header.xml (Email)
 - EM1803724_COC.pdf (Email)

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**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1803724**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 31350060803	Page	: 1 of 3
Order number	: ----	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: SCOTT HILLIARD		

Dates

Date Samples Received	: 27-Feb-2018 15:50	Issue Date	: 28-Feb-2018
Client Requested Due Date	: 06-Mar-2018	Scheduled Reporting Date	: 06-Mar-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 8.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 8 / 8

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Asbestos Identification in Soils : EA200		
NEL-BH140_0.2m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH140_0.5m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH140_1.0m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH140_1.5m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
NEL-BH140_3.0m	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200 Asbestos Identification in Soils -	SOIL - P-16 IWRG 621
EM1803724-001	27-Feb-2018 00:00	NEL-BH140_0.2m	✓	✓	✓
EM1803724-002	27-Feb-2018 00:00	NEL-BH140_0.5m	✓	✓	✓
EM1803724-003	27-Feb-2018 00:00	NEL-BH140_1.0m	✓	✓	✓
EM1803724-004	27-Feb-2018 00:00	NEL-BH140_1.5m	✓	✓	✓
EM1803724-008	27-Feb-2018 00:00	NEL-BH140_3.0m	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water V/C EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1803724-005	27-Feb-2018 00:00	RB101	✓	
EM1803724-006	27-Feb-2018 00:00	TB101		✓
EM1803724-007	27-Feb-2018 00:00	FB101	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

ALL ACCOUNTS

- Email ap-fss@ghd.com

- *AU Certificate of Analysis - NATA (COA)

- [illegible]

- *AU Certificate of Analysis - NATA (COA)

- [illegible]

QUALITY CONTROL REPORT

Work Order	: EM1803724	Page	: 1 of 17
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 27-Feb-2018
Order number	: ----	Date Analysis Commenced	: 28-Feb-2018
C-O-C number	: ----	Issue Date	: 06-Mar-2018
Sampler	: SCOTT HILLIARD		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 8		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1462668)									
EM1803651-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	3.6	3.5	2.82	0% - 20%
EM1803680-006	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.6	7.7	1.31	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1462449)									
EM1803712-006	Anonymous	EA055: Moisture Content	----	1	%	10.0	10.5	4.41	0% - 50%
EM1803729-003	Anonymous	EA055: Moisture Content	----	1	%	7.0	7.2	3.15	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1462334)									
EM1803710-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	6	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	9	49.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	9	57.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	7	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	7	11	35.1	No Limit
EM1803724-002	NEL-BH140_0.5m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1462334) - continued									
EM1803724-002	NEL-BH140_0.5m	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1462335)									
EM1803710-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1803724-002	NEL-BH140_0.5m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1462420)									
EM1803646-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1803710-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1468255)									
EM1803651-012	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	75	75	0.00	0% - 50%
EM1803651-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	6080	5960	2.00	0% - 20%
EK040T: Fluoride Total (QC Lot: 1467565)									
EM1803724-001	NEL-BH140_0.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	180	170	0.00	No Limit
EM1803744-021	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	<40	50	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1464468)									
EM1803556-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1462568)									
EM1803724-001	NEL-BH140_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1462568)									
EM1803724-001	NEL-BH140_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1462568)									
EM1803724-001	NEL-BH140_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1462568) - continued									
EM1803724-001	NEL-BH140_0.2m	EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1464466)									
EM1803556-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.06	<0.05	0.00	No Limit
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1464466)									
EM1803556-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1464466)									
EM1803556-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	1.8	0.6	99.3	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	0.9	<0.5	61.5	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	6.7	# 2.5	91.6	0% - 50%
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	1.9	0.8	81.3	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	6.8	# 3.1	75.2	0% - 50%
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	7.2	# 3.3	73.7	0% - 50%
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	3.4	1.6	75.3	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	3.2	1.5	72.5	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1464466) - continued									
EM1803556-002	Anonymous	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	5.3	# 3.0	56.2	0% - 50%
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	3.4	2.0	54.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	1.3	0.7	52.7	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	1.4	0.8	52.3	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1464466)									
EM1803556-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1462568)									
EM1803724-001	NEL-BH140_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1464467)									
EM1803710-003	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1803556-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	120	220	56.5	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	120	170	34.8	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1462568)									
EM1803724-001	NEL-BH140_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1464833) - continued									
EM1803715-034	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.002	<0.002	0.00	No Limit
EM1803754-008	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.006	0.006	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1464264)									
EM1803721-012	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1464090)									
EM1803722-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1803758-004	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1464090)									
EM1803722-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	137	135	1.36	0% - 20%
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	294	292	0.578	0% - 20%
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	29	28	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1803758-004	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1464090)									
EM1803722-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit

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 Work Order : EM1803724
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 1464090) - continued									
EM1803722-001	Anonymous	EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1803758-004	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1464090)									
EM1803722-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1803758-004	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1464089)									
EM1803722-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	220	220	0.00	0% - 50%
EM1803758-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1464089)									
EM1803722-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	210	210	0.00	0% - 50%
EM1803758-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1464089)									
EM1803722-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	2	2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1803758-004	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit		



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1462334)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	97.2	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	97.5	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	94.3	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.2	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	99.5	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	106	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	102	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	80.8	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	102	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	102	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1462335)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.6	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1462420)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	84.4	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1468255)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	91.7	80	110
EK040T: Fluoride Total (QCLot: 1467565)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	99.2	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1464468)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1.2 mg/kg	98.3	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1462568)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	87.9	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	82.2	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	98.4	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	93.2	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	97.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	93.3	74	114
EP074H: Naphthalene (QCLot: 1462568)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	97.9	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1462568)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	107	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	94.8	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1462568) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	102	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	100	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	97.9	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	91.9	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	95.0	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	94.1	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	93.7	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	86.0	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	89.1	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	98.8	70	119
EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	102	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	78.8	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	98.0	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	89.2	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	90.8	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	78.4	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1464466)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	103	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	90.7	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	94.5	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	84.4	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	93.3	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	81.9	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	94.7	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	92.6	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	80.3	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1464466)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	97.1	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	97.0	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	96.2	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	89.2	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	102	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	51.2	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	97.6	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	69.8	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	93.4	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	69.3	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1464466)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	89.2	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	98.1	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	97.0	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	98.2	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	99.6	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	67.0	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	99.7	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	102	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	110	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	114	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	113	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	110	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	107	55	137
EP075-EM: Dibenzo(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	108	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	107	55	137
EP075I: Organochlorine Pesticides (QCLot: 1464466)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	99.2	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	96.5	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	103	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	101	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	103	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	99.3	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	99.7	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	101	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	103	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	103	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	102	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	103	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	108	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	107	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	121	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	110	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	109	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	112	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	109	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	111	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1462568)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	84.3	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1464555)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.8	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.3	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.9	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	98.8	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.2	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.1	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	105	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	102	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1464558)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	105	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1464556)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	85.8	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1472225)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	104	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1464833)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	87.2	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1464264)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	102	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1462387)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	55.9	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1464090)								



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1464090) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	95.5	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1464090)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	92.5	64	139
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	93.4	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	104	81	144
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	98.5	73	121
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	101	78	120
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	97.3	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	91.0	66	119
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	101	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	99.1	70	120
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	106	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	93.5	75	119
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	98.5	75	112
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	110	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	97.7	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1464090)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	99.2	82	114
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	101	76	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	98.8	82	112
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	94.9	62	119
EP074G: Trihalomethanes (QCLot: 1464090)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	101	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1462388)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	68.1	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	72.9	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	75.4	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	79.0	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	85.6	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	2.5 µg/L	78.3	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	88.4	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	91.3	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	86.4	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	89.0	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	96.6	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	88.9	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	88.8	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1462388) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	91.6	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	92.3	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	94.2	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1462386)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	104	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	100	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	108	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	94.6	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	112	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	98.8	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	112	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	110	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	108	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1462386)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	43.7	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	90.4	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	81.2	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	104	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	124	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	90 µg/L	104	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	90 µg/L	30.5	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	90 µg/L	75.1	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	90 µg/L	87.4	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	75 µg/L	97.0	32	135
EP075I: Organochlorine Pesticides (QCLot: 1462386)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	110	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	115	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	111	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	112	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	112	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	119	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	116	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	114	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	116	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1462389)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	121	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	128	60	133



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1462420) - continued							
EM1803646-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	86.7	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1468255)							
EM1803646-002	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	99.0	77	113
EK040T: Fluoride Total (QCLot: 1467565)							
EM1803724-002	NEL-BH140_0.5m	EK040T: Fluoride	16984-48-8	400 mg/kg	97.2	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1464468)							
EM1803556-006	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1.2 mg/kg	102	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1462568)							
EM1803724-002	NEL-BH140_0.5m	EP074-UT: Benzene	71-43-2	2 mg/kg	86.2	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	93.5	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1462568)							
EM1803724-002	NEL-BH140_0.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	99.3	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	91.4	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	85.7	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1464466)							
EM1803556-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	116	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	43.2	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	18.2	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1464466)							
EM1803556-003	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	69.9	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	90.3	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1464466)							
EM1803556-003	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	102	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	88.6	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1462568)							
EM1803724-002	NEL-BH140_0.5m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	70.8	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1464467)							
EM1803556-006	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	83.6	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	93.5	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	95.0	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1462568)							
EM1803724-002	NEL-BH140_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	68.0	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1464467)							
EM1803556-006	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	89.2	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	93.8	67	121

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 Work Order : EM1803724
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1464467) - continued							
EM1803556-006	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	88.7	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1464555)							
EM1803704-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	100	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	97.7	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	97.8	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	99.2	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	98.2	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	104	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1464556)							
EM1803719-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	87.2	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1472225)							
EM1803721-002	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	94.8	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1464833)							
EM1803724-005	RB101	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	89.9	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1464264)							
EM1803721-013	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	115	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1464090)							
EM1803722-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	101	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	83.2	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1464090)							
EM1803722-002	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	103	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1464089)							
EM1803722-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	88.7	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1464089)							
EM1803722-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	85.4	44	122
EP080: BTEXN (QCLot: 1464089)							
EM1803722-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	102	68	130
		EP080: Toluene	108-88-3	20 µg/L	102	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1803724	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 27-Feb-2018
Site	: ----	Issue Date	: 06-Mar-2018
Sampler	: SCOTT HILLIARD	No. of samples received	: 8
Order number	: ----	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- Duplicate outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP075B: Polynuclear Aromatic Hydrocarbons	EM1803556--002	Anonymous	Phenanthrene	85-01-8	91.6 %	0% - 50%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1803556--002	Anonymous	Fluoranthene	206-44-0	75.2 %	0% - 50%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1803556--002	Anonymous	Pyrene	129-00-0	73.7 %	0% - 50%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1803556--002	Anonymous	Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	56.2 %	0% - 50%	RPD exceeds LOR based limits

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RB101, FB101	----	----	----	01-Mar-2018	27-Feb-2018	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Fluoride by PC Titrator	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation				Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation		Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract									
Soil Glass Jar - Unpreserved (EA001) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	01-Mar-2018	06-Mar-2018	✓		01-Mar-2018	01-Mar-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)									
Soil Glass Jar - Unpreserved (EA055) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	----	----	----		28-Feb-2018	13-Mar-2018	✓
EG005T: Total Metals by ICP-AES									
Soil Glass Jar - Unpreserved (EG005T) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	01-Mar-2018	26-Aug-2018	✓		01-Mar-2018	26-Aug-2018	✓
EG035T: Total Recoverable Mercury by FIMS									
Soil Glass Jar - Unpreserved (EG035T) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	01-Mar-2018	27-Mar-2018	✓		01-Mar-2018	27-Mar-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)									
Soil Glass Jar - Unpreserved (EG048G) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	28-Feb-2018	27-Mar-2018	✓		28-Feb-2018	07-Mar-2018	✓
EK026SF: Total CN by Segmented Flow Analyser									
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	02-Mar-2018	13-Mar-2018	✓		05-Mar-2018	16-Mar-2018	✓
EK040T: Fluoride Total									
Soil Glass Jar - Unpreserved (EK040T) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	02-Mar-2018	27-Mar-2018	✓		06-Mar-2018	27-Mar-2018	✓
EP066: Polychlorinated Biphenyls (PCB)									
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	01-Mar-2018	13-Mar-2018	✓		01-Mar-2018	10-Apr-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons									
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	28-Feb-2018	06-Mar-2018	✓		02-Mar-2018	06-Mar-2018	✓
EP074H: Naphthalene									
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	28-Feb-2018	06-Mar-2018	✓		02-Mar-2018	06-Mar-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	28-Feb-2018	06-Mar-2018	✔	02-Mar-2018	06-Mar-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	01-Mar-2018	13-Mar-2018	✔	01-Mar-2018	10-Apr-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	01-Mar-2018	13-Mar-2018	✔	01-Mar-2018	10-Apr-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	01-Mar-2018	13-Mar-2018	✔	01-Mar-2018	10-Apr-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	01-Mar-2018	13-Mar-2018	✔	01-Mar-2018	10-Apr-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	01-Mar-2018	13-Mar-2018	✔	02-Mar-2018	10-Apr-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	28-Feb-2018	06-Mar-2018	✔	02-Mar-2018	06-Mar-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	01-Mar-2018	13-Mar-2018	✔	02-Mar-2018	10-Apr-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH140_0.2m, NEL-BH140_1.0m	NEL-BH140_0.5m,	27-Feb-2018	28-Feb-2018	06-Mar-2018	✔	02-Mar-2018	06-Mar-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
RB101,	FB101	27-Feb-2018	----	----	----	01-Mar-2018	27-Feb-2018	✖



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020B-F) RB101,	FB101	27-Feb-2018	----	----	----	01-Mar-2018	26-Aug-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) RB101,	FB101	27-Feb-2018	----	----	----	01-Mar-2018	27-Mar-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB101,	FB101	27-Feb-2018	----	----	----	05-Mar-2018	27-Mar-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) RB101,	FB101	27-Feb-2018	----	----	----	01-Mar-2018	13-Mar-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB101,	FB101	27-Feb-2018	----	----	----	01-Mar-2018	27-Mar-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB101,	FB101	27-Feb-2018	28-Feb-2018	06-Mar-2018	✓	01-Mar-2018	09-Apr-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB101,	FB101	27-Feb-2018	01-Mar-2018	13-Mar-2018	✓	01-Mar-2018	13-Mar-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB101,	FB101	27-Feb-2018	01-Mar-2018	13-Mar-2018	✓	01-Mar-2018	13-Mar-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB101,	FB101	27-Feb-2018	01-Mar-2018	13-Mar-2018	✓	01-Mar-2018	13-Mar-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB101,	FB101	27-Feb-2018	01-Mar-2018	13-Mar-2018	✓	01-Mar-2018	13-Mar-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB101,	FB101	27-Feb-2018	28-Feb-2018	06-Mar-2018	✓	01-Mar-2018	09-Apr-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB101,	FB101	27-Feb-2018	28-Feb-2018	06-Mar-2018	✓	01-Mar-2018	09-Apr-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB101,	FB101	27-Feb-2018	28-Feb-2018	06-Mar-2018	✓	01-Mar-2018	09-Apr-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB101,	FB101	27-Feb-2018	28-Feb-2018	06-Mar-2018	✓	01-Mar-2018	09-Apr-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB101,	FB101	27-Feb-2018	28-Feb-2018	06-Mar-2018	✓	01-Mar-2018	09-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB101, FB101	TB101,	27-Feb-2018	01-Mar-2018	13-Mar-2018	✓	01-Mar-2018	13-Mar-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB101,	FB101	27-Feb-2018	28-Feb-2018	06-Mar-2018	✓	01-Mar-2018	09-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB101, FB101	TB101,	27-Feb-2018	01-Mar-2018	13-Mar-2018	✓	01-Mar-2018	13-Mar-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RB101, FB101	TB101,	27-Feb-2018	01-Mar-2018	13-Mar-2018	✓	01-Mar-2018	13-Mar-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	* EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	* EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1803919**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **MICHAEL LO MONALD**
Site : **North East Link**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **6**
No. of samples analysed : **6**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 01-Mar-2018 12:45
Date Analysis Commenced : 05-Mar-2018
Issue Date : 08-Mar-2018 11:48



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
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General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EG035F: 1803930 #1 Poor matrix spike recovery for dissolved mercury due to sample matrix. Confirmed by re-extraction and re-analysis.
- EG048G: EM1803767 #6, matrix spike failed due to sample matrix interferences.
- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH140_4.5m	NEL-BH140_6.0m	NEL-BH140_7.95m	----	----
Client sampling date / time					28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803919-001	EM1803919-002	EM1803919-003	-----	-----
				Result	Result	Result	Result	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.6	7.6	7.5	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		16.4	20.9	19.7	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Copper	7440-50-8	5	mg/kg		13	7	7	----	----
Lead	7439-92-1	5	mg/kg		13	12	9	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg		18	11	10	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	----	----
Zinc	7440-66-6	5	mg/kg		16	12	21	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	0.2	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		200	360	400	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH140_4.5m	NEL-BH140_6.0m	NEL-BH140_7.95m	----	----
Client sampling date / time					28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803919-001	EM1803919-002	EM1803919-003	-----	-----
					Result	Result	Result	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ øSum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ øSum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ øSum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH140_4.5m	NEL-BH140_6.0m	NEL-BH140_7.95m	----	----
Client sampling date / time					28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803919-001	EM1803919-002	EM1803919-003	-----	-----
					Result	Result	Result	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	----	----
^ Σ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Σ of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH140_4.5m	NEL-BH140_6.0m	NEL-BH140_7.95m	----	----
Client sampling date / time				28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1803919-001	EM1803919-002	EM1803919-003	-----	-----
				Result	Result	Result	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ øSum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ øSum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ øSum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ øChlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ øSum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH140_4.5m	NEL-BH140_6.0m	NEL-BH140_7.95m	----	----
Client sampling date / time					28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803919-001	EM1803919-002	EM1803919-003	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		99.0	101	102	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		92.0	92.5	91.1	----	----
Toluene-D8	2037-26-5	0.1	%		90.7	93.3	88.9	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		92.1	102	92.2	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		109	101	114	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		90.4	85.4	94.9	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		103	92.5	107	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		103	99.8	109	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		105	98.5	110	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		114	110	118	----	----
Anthracene-d10	1719-06-8	0.025	%		113	108	117	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		110	109	120	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB200	RB200	TB200	----	----
Client sampling date / time				28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1803919-004	EM1803919-005	EM1803919-006	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.10	6.30	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB200	RB200	TB200	----	----
Client sampling date / time					28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803919-004	EM1803919-005	EM1803919-006	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				FB200	RB200	TB200	----	----
Client sampling date / time				28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1803919-004	EM1803919-005	EM1803919-006	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB200	RB200	TB200	----	----
Client sampling date / time					28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803919-004	EM1803919-005	EM1803919-006	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		96.8	99.0	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		87.3	92.8	----	----	----
Toluene-D8	2037-26-5	5	%		111	98.4	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		91.4	97.1	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		35.0	30.2	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		73.8	71.0	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		69.3	71.6	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		84.5	83.5	----	----	----
Anthracene-d10	1719-06-8	1.0	%		89.9	90.9	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		94.7	96.1	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB200	RB200	TB200	----	----
Client sampling date / time					28-Feb-2018 00:00	28-Feb-2018 00:00	28-Feb-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1803919-004	EM1803919-005	EM1803919-006	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		33.2	28.7	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		73.7	84.3	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		61.4	70.4	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		71.4	80.6	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		83.6	88.8	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		85.1	86.6	----	----	----
Anthracene-d10	1719-06-8	0.25	%		97.8	102	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		99.6	106	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		90.0	95.6	95.7	----	----
Toluene-D8	2037-26-5	2	%		104	92.3	89.9	----	----
4-Bromofluorobenzene	460-00-4	2	%		103	99.3	98.9	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129



ASAP

ME /124/18

Job Number 3135006/0803		GHD Contact DAVID QUINN		Laboratory: ALS SPRINGVALE		COURIER AND LABORATORY INSTRUCTIONS: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Project Manager and GHD Contact with the GHD Job Number in the e-mail subject line. Note email format: firstname.lastname@ghd.com Results to be provided in ESDAT compatible format															
Project NORTH EAST LINK		Address:		Laboratory Contact: SMIRLEY LECORNU																	
GHD Project Manager -		GHD Contact DAVID QUINN		Container																	
GHD PM email -		GHD Contact email David.Quinn@ghd.com		Analyses Required																	
Sample I.D.		Date	Time	Composite Sample	Sample Matrix S- Soil, SL- Sludge W- Water, A- Air GW- Groundwater	U- Soil in 5-l bag V- Vial - 6 glass bottle P- Plastic bottle	Number	Volume (mL)													
NEL-BH140_4.5m		28/2/18	Am	-	S	J	1	250	X												
NEL-BH140_6.0m		"	Am	-	S	J	7	250	X												
NEL-BH140_7.95m		"	Am	-	S	J	3	250	X												
FB200		"	PM	-	W	UGP	8	1	X												
RB200		"	PM	-	W	UGP	8	1	X												
TB200		"	PM	-	W	V	1	1	X												
TOTAL NUMBER OF SAMPLES		20		GENERAL COMMENTS:		cc to: Mark Davidson (Aecom) Nazeha Rostli (Aecom)															
TOTAL NUMBER OF ESKIES		1																			
SAMPLES/ESKY CHILLED Y/N		X																			
CUSTODY DETAILS:																					
Name		Date/Time Received		Date/Time Relinquished																	
SAMPLER MICHAEL LO MONACO		28/2/18 AM		01/02/18 AM																	
GHD SERVICE CENTRE																					
COURIER																					
LABORATORY		1/3/18 12-45																			

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 11 January 2018 2:35 PM
To: Shirley LeCornu
Subject: RE: EM1801198 - GHD - 31/35006/0803

Follow Up Flag: Follow up
Flag Status: Flagged

** No asbestos required*
** Asbestos only added if addition request is made*
Thank
Shel 8/2

Hi Shirley,

There will be some more samples coming through so we'll hold off analysing at the moment, so they can be done in a batch.

The analysis will be VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Thanks,

David Quinn
Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 313 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
Water | Energy & Resources | Environment | Property & Buildings | Transportation

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

Please consider our environment before printing this email

From: Shirley LeCornu [mailto:shirley.lecornu@alsglobal.com]
Sent: Thursday, 11 January 2018 9:07 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1801198 - GHD - 31/35006/0803

Hi David

Can you please let me know analysis required for the samples we received yesterday. COC attached.

Thanks

Shirley

Shirley LeCornu
Client Services Officer – Springvale
Environmental



T +61 3 8549 9600 D +61 3 8549 9630

F +61 3 8549 9626

Shirley.lecornu@alsglobal.com

2-4 Westall Rd
Springvale Vic 3171
Australia

We are keen for your feedback! [Please click here for your 1 question survey](#)

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1803919

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060803</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : North East Link</p> <p>Sampler : MICHAEL LO MONALD</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9601</p> <p>Page : 1 of 3</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Dates

Date Samples Received : 01-Mar-2018 12:45	Issue Date : 03-Mar-2018
Client Requested Due : 08-Mar-2018	Scheduled Reporting Date : 08-Mar-2018
Date	

Delivery Details

Mode of Delivery : Carrier	Security Seal : Intact.
No. of coolers/boxes : 1	Temperature : 5.1°C - Ice present
Receipt Detail :	No. of samples received / analysed : 6 / 6

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1803919-001	28-Feb-2018 00:00	NEL-BH140_4.5m	✓	✓
EM1803919-002	28-Feb-2018 00:00	NEL-BH140_6.0m	✓	✓
EM1803919-003	28-Feb-2018 00:00	NEL-BH140_7.95m	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water V/C EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1803919-004	28-Feb-2018 00:00	FB200	✓	
EM1803919-005	28-Feb-2018 00:00	RB200	✓	
EM1803919-006	28-Feb-2018 00:00	TB200		✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Due for extraction	Due for analysis	Samples Received		Instructions Received	
Client Sample ID(s)	Container		Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator						
FB200	Clear Plastic Bottle - Natural	----	28-Feb-2018	01-Mar-2018	✗	----
RB200	Clear Plastic Bottle - Natural	----	28-Feb-2018	01-Mar-2018	✗	----

QUALITY CONTROL REPORT

Work Order	: EM1803919	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 01-Mar-2018
Order number	: ----	Date Analysis Commenced	: 05-Mar-2018
C-O-C number	: ----	Issue Date	: 08-Mar-2018
Sampler	: MICHAEL LO MONALD		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 6		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1471853)									
EM1803874-002	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.8	7.8	0.00	0% - 20%
EM1803874-011	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.0	8.0	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1471318)									
EM1803881-001	Anonymous	EA055: Moisture Content	----	1	%	24.8	26.6	7.07	0% - 20%
EM1803923-004	Anonymous	EA055: Moisture Content	----	1	%	12.4	11.1	11.4	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1471672)									
EM1803391-118	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	9	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	45	44	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	11	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	24	24	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	30	31	3.46	No Limit
EM1803919-002	NEL-BH140_6.0m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	11	10	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	7	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	10	26.1	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1471672) - continued									
EM1803919-002	NEL-BH140_6.0m	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	12	12	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1471673)									
EM1803391-118	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1803919-002	NEL-BH140_6.0m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1474807)									
EM1803767-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1803923-007	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1475217)									
EM1803810-002	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1803810-038	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	2	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1471347)									
EM1803839-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	120	130	11.0	No Limit
EM1803839-033	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	140	150	6.80	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1471220)									
EM1803919-001	NEL-BH140_4.5m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1471103)									
EM1803839-002	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1803839-035	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1471103)									
EM1803839-002	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1803839-035	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1471103)									
EM1803839-002	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1471103) - continued									
EM1803839-002	Anonymous	EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1803839-035	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1471218)							
EM1803919-001	NEL-BH140_4.5m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1471218) - continued									
EM1803919-001	NEL-BH140_4.5m	EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1471218)									
EM1803919-001	NEL-BH140_4.5m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1471218)									
EM1803919-001	NEL-BH140_4.5m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1471218)									
EM1803919-001	NEL-BH140_4.5m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Sub-Matrix: **WATER**

Page : 7 of 19
 Work Order : EM1803919
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1474036) - continued									
EM1803918-013	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.90	6.90	0.00	0% - 20%
EM1803950-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.87	7.89	0.254	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1471526)									
EM1803837-001	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1471528)									
EM1803893-009	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1803937-005	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.096	0.097	1.17	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.009	0.008	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.230	0.230	0.00	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1471525)									
EM1803823-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1803823-011	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0003	0.0002	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1471529)									
EM1803919-005	RB200	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1475268)									
EM1803782-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	0.01	0.02	0.00	No Limit
EM1803904-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1472008)									
EM1803905-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.068	0.068	0.00	0% - 50%
EM1803884-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.001	<0.001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1474037)									
EM1803918-013	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.00	No Limit
EM1803950-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	3.8	3.9	3.88	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1471151)									
EM1803919-004	FB200	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1470923)									
EM1803391-019	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1470923)									
EM1803391-019	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1470923)									
EM1803391-019	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1470923)									
EM1803391-019	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1470921)									
EM1803836-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1803892-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1470922)									
EM1803863-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1803391-019	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1471149)									
EM1803919-004	FB200	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1470921)									
EM1803836-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1803892-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1470922)									
EM1803863-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1803391-019	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1471149)									
EM1803919-004	FB200	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080: BTEXN (QC Lot: 1470921)									
EM1803836-004	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1803892-003	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080: BTEXN (QC Lot: 1470922)									
EM1803863-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1803391-019	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1471672)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	99.4	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	94.0	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.4	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.8	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	90.4	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	100	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	102	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	90.8	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	89.6	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	103	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1471673)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.6	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1474807)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	81.9	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1475217)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	90.3	80	110
EK040T: Fluoride Total (QCLot: 1471347)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	98.0	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1471220)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	118	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1471103)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	100	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	97.0	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	99.8	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	97.6	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	98.0	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	96.3	74	114
EP074H: Naphthalene (QCLot: 1471103)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	99.2	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1471103)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	131	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	105	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1471103) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	103	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	104	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	95.5	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	90.0	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	99.8	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	99.1	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	94.4	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	95.6	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	95.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	96.6	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	98.2	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	102	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	90.9	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	100	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.3	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	94.3	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	89.8	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1471218)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	92.0	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	84.3	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	101	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	87.8	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	100	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	92.2	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	102	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	84.6	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	85.6	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1471218)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	83.8	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	92.2	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	86.9	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	80.9	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	100	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	95.9	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	79.3	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	73.1	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	83.9	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	82.6	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1471218)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	105	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	109	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	111	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	108	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	106	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	71.3	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	103	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	104	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	100	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	105	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	107	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	104	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	101	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	99.6	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	101	55	137
EP075I: Organochlorine Pesticides (QCLot: 1471218)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	105	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	103	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	106	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	106	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	103	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	103	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	105	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	102	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	100	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	102	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	105	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	102	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	106	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	101	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	103	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	106	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	104	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	105	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	101	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	100	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1471103)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	94.5	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1471526)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	95.7	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1471528)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	104	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.0	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.9	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.3	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.7	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	96.0	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	104	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1471525)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.3	81	114
EG035F: Dissolved Mercury by FIMS (QCLot: 1471529)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.2	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1475268)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1472008)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	87.3	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1474037)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	112	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1471151)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1471151) - continued								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	102	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1470923)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	91.1	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1470923)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	71.0	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	74.7	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	96.2	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	82.5	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	91.6	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	81.8	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	71.9	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	97.8	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	82.6	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	99.9	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	78.4	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	87.6	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	100	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	85.8	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1470923)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	92.8	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	94.1	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	94.0	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	85.8	62	119
EP074G: Trihalomethanes (QCLot: 1470923)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	91.3	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1471148)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	61.4	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	65.0	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	67.8	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	73.2	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	84.6	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	2.5 µg/L	69.1	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	91.3	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	93.4	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	86.6	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	92.2	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	96.9	52	131
	205-82-3							

Method Blank (MB) Report

Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
	LCS	Low	High

EP080/071: Total Petroleum Hydrocarbons (QCLot: 1470921)



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1470921) - continued								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	98.2	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1470922)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	95.5	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1471149)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	112	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	116	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	107	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1470921)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	93.2	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1470922)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	90.8	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1471149)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	110	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	109	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	112	58	137
EP080: BTEXN (QCLot: 1470921)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	101	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	99.7	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	100	73	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	103	72	131
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	105	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	119	74	124
EP080: BTEXN (QCLot: 1470922)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	98.4	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	99.8	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	98.3	73	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	100	72	131
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	104	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	106	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report		
Spike	SpikeRecovery(%)	Recovery Limits (%)



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1471672)							
EM1803391-119	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	87.4	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	84.7	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	92.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	85.0	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	96.9	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	82.6	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	79.0	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	78.6	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1471673)							
EM1803391-119	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	80.9	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1474807)							
EM1803767-006	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	# 57.4	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1475217)							
EM1803810-009	Anonymous	EK026SF: Total Cyanide	57-12-5	2000 mg/kg	98.7	77	113
EK040T: Fluoride Total (QCLot: 1471347)							
EM1803839-006	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	103	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1471220)							
EM1803923-007	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	119	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1471103)							
EM1803839-006	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	95.8	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	95.9	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1471103)							
EM1803839-006	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	96.4	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	86.2	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	98.4	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1471218)							
EM1803919-002	NEL-BH140_6.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	105	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	89.5	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	50.0	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1471218)							
EM1803919-002	NEL-BH140_6.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	94.8	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	86.4	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1471218)							
EM1803919-002	NEL-BH140_6.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	110	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	112	27	169



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1471103)							
EM1803839-006	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	82.2	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1471219)							
EM1803919-003	NEL-BH140_7.95m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	88.0	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	95.8	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	98.3	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1471103)							
EM1803839-006	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	78.1	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1471219)							
EM1803919-003	NEL-BH140_7.95m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	93.1	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	97.1	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	91.6	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1471528)							
EM1803893-009	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	101	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	93.2	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	98.0	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	97.9	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	99.4	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	100	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1471525)							
EM1803823-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	85.6	70	120
EG035F: Dissolved Mercury by FIMS (QCLot: 1471529)							
EM1803930-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	# 45.3	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1475268)							
EM1803821-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	85.2	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1472008)							
EM1803885-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	82.4	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1474037)							
EM1803918-011	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	91.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1471151)							
EM1803919-005	RB200	EP066: Total Polychlorinated biphenyls	----	10 µg/L	88.6	47	137
EP074E: Halogenated Aliphatic Compounds (QCLot: 1470923)							
EM1803391-054	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	95.4	40	124



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 1470923) - continued							
EM1803391-054	Anonymous	EP074: Trichloroethene	79-01-6	20 µg/L	91.8	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1470923)							
EM1803391-054	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	102	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1470921)							
EM1803892-001	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	85.9	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1470922)							
EM1803391-054	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	80.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1470921)							
EM1803892-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	80.8	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1470922)							
EM1803391-054	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	76.5	44	122
EP080: BTEXN (QCLot: 1470921)							
EM1803892-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	99.9	68	130
		EP080: Toluene	108-88-3	20 µg/L	98.1	72	132
EP080: BTEXN (QCLot: 1470922)							
EM1803391-054	Anonymous	EP080: Benzene	71-43-2	20 µg/L	96.1	68	130
		EP080: Toluene	108-88-3	20 µg/L	94.6	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1803919	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 01-Mar-2018
Site	: North East Link	Issue Date	: 08-Mar-2018
Sampler	: MICHAEL LO MONALD	No. of samples received	: 6
Order number	: ----	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank** value outliers occur.
- **NO Duplicate** outliers occur.
- **NO Laboratory Control** outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG048: Hexavalent Chromium (Alkaline Digest)	EM1803767--006	Anonymous	Hexavalent Chromium	18540-29-9	57.4 %	58-114%	Recovery less than lower data quality objective

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	EM1803930--001	Anonymous	Mercury	7439-97-6	45.3 %	70-120%	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural FB200,	RB200	----	----	----	06-Mar-2018	28-Feb-2018
						6

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	8	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	1	16	6.25	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	8	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	06-Mar-2018	07-Mar-2018	✓	06-Mar-2018	06-Mar-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	----	----	----	05-Mar-2018	14-Mar-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	06-Mar-2018	27-Aug-2018	✓	06-Mar-2018	27-Aug-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	06-Mar-2018	28-Mar-2018	✓	07-Mar-2018	28-Mar-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	06-Mar-2018	28-Mar-2018	✓	06-Mar-2018	13-Mar-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	06-Mar-2018	14-Mar-2018	✓	07-Mar-2018	20-Mar-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	05-Mar-2018	28-Mar-2018	✓	07-Mar-2018	28-Mar-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	05-Mar-2018	14-Mar-2018	✓	06-Mar-2018	14-Apr-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	05-Mar-2018	07-Mar-2018	✓	06-Mar-2018	07-Mar-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	05-Mar-2018	07-Mar-2018	✓	06-Mar-2018	07-Mar-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	05-Mar-2018	07-Mar-2018	✔	06-Mar-2018	07-Mar-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	05-Mar-2018	14-Mar-2018	✔	06-Mar-2018	14-Apr-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	05-Mar-2018	14-Mar-2018	✔	06-Mar-2018	14-Apr-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	05-Mar-2018	14-Mar-2018	✔	06-Mar-2018	14-Apr-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	05-Mar-2018	14-Mar-2018	✔	06-Mar-2018	14-Apr-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	05-Mar-2018	07-Mar-2018	✔	06-Mar-2018	07-Mar-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH140_4.5m, NEL-BH140_7.95m	NEL-BH140_6.0m,	28-Feb-2018	05-Mar-2018	07-Mar-2018	✔	06-Mar-2018	07-Mar-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator									
Clear Plastic Bottle - Natural (EA005-P) FB200,		RB200	28-Feb-2018	----	----	----	06-Mar-2018	28-Feb-2018	✘
EG020F: Dissolved Metals by ICP-MS									
Clear Plastic Bottle - Nitric Acid; Filtered (EG020B-F) FB200,		RB200	28-Feb-2018	----	----	----	05-Mar-2018	27-Aug-2018	✔
EG035F: Dissolved Mercury by FIMS									
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) FB200,		RB200	28-Feb-2018	----	----	----	05-Mar-2018	28-Mar-2018	✔



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) FB200,	RB200	28-Feb-2018	----	----	----	06-Mar-2018	28-Mar-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) FB200,	RB200	28-Feb-2018	----	----	----	05-Mar-2018	14-Mar-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) FB200,	RB200	28-Feb-2018	----	----	----	06-Mar-2018	28-Mar-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) FB200,	RB200	28-Feb-2018	05-Mar-2018	07-Mar-2018	✓	06-Mar-2018	14-Apr-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) FB200,	RB200	28-Feb-2018	05-Mar-2018	14-Mar-2018	✓	06-Mar-2018	14-Mar-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB200,	RB200	28-Feb-2018	05-Mar-2018	14-Mar-2018	✓	06-Mar-2018	14-Mar-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB200,	RB200	28-Feb-2018	05-Mar-2018	14-Mar-2018	✓	06-Mar-2018	14-Mar-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) FB200,	RB200	28-Feb-2018	05-Mar-2018	14-Mar-2018	✓	06-Mar-2018	14-Mar-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB200,	RB200	28-Feb-2018	05-Mar-2018	07-Mar-2018	✓	06-Mar-2018	14-Apr-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB200,	RB200	28-Feb-2018	05-Mar-2018	07-Mar-2018	✓	07-Mar-2018	14-Apr-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB200,	RB200	28-Feb-2018	05-Mar-2018	07-Mar-2018	✓	07-Mar-2018	14-Apr-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) FB200,	RB200	28-Feb-2018	05-Mar-2018	07-Mar-2018	✓	07-Mar-2018	14-Apr-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) FB200, RB200	28-Feb-2018	05-Mar-2018	07-Mar-2018	✓	06-Mar-2018	14-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB200	28-Feb-2018	05-Mar-2018	14-Mar-2018	✓	05-Mar-2018	14-Mar-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB200, RB200	28-Feb-2018	05-Mar-2018	14-Mar-2018	✓	06-Mar-2018	14-Mar-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) FB200, RB200	28-Feb-2018	05-Mar-2018	07-Mar-2018	✓	06-Mar-2018	14-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB200	28-Feb-2018	05-Mar-2018	14-Mar-2018	✓	05-Mar-2018	14-Mar-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB200, RB200	28-Feb-2018	05-Mar-2018	14-Mar-2018	✓	06-Mar-2018	14-Mar-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) TB200	28-Feb-2018	05-Mar-2018	14-Mar-2018	✓	05-Mar-2018	14-Mar-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB200, RB200	28-Feb-2018	05-Mar-2018	14-Mar-2018	✓	06-Mar-2018	14-Mar-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **✖** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	3	22	13.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	35	11.43	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	16	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	35	5.71	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	* EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	* EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1804004**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **SH**
Site : **North East Link**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **7**
No. of samples analysed : **5**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 05-Mar-2018 17:30
Date Analysis Commenced : 06-Mar-2018
Issue Date : 08-Mar-2018 13:54



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EG048G: EM1803767 #6, matrix spike failed due to sample matrix interferences.
- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH109_0.2m	NEL-BH109_1.1m	----	----	----
Client sampling date / time					05-Mar-2018 00:00	05-Mar-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1804004-001	EM1804004-003	-----	-----	-----
					Result	Result	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.3	7.8	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		19.6	16.2	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		8	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		18	12	----	----	----
Lead	7439-92-1	5	mg/kg		30	14	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		40	23	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		63	30	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		370	440	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH109_0.2m	NEL-BH109_1.1m	----	----	----
Client sampling date / time					05-Mar-2018 00:00	05-Mar-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1804004-001	EM1804004-003	-----	-----	-----
					Result	Result	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ øSum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ øSum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ øSum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH109_0.2m	NEL-BH109_1.1m	----	----	----
Client sampling date / time					05-Mar-2018 00:00	05-Mar-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1804004-001	EM1804004-003	-----	-----	-----
					Result	Result	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Σ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.1	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.4	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	1.2	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	0.6	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	0.6	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	5.9	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	0.8	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	1.0	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.3	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH109_0.2m	NEL-BH109_1.1m	----	----	----
Client sampling date / time					05-Mar-2018 00:00	05-Mar-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1804004-001	EM1804004-003	-----	-----	-----
					Result	Result	----	----	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Σ of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Σ of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Σ of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	----	----	----
^ Σ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Σ of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH109_0.2m	NEL-BH109_1.1m	----	----	----
Client sampling date / time					05-Mar-2018 00:00	05-Mar-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1804004-001	EM1804004-003	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		86.3	82.6	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		71.6	99.8	----	----	----
Toluene-D8	2037-26-5	0.1	%		69.8	97.2	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		76.2	93.0	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		119	99.6	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		106	86.4	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		131	124	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		116	96.8	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		121	106	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		120	114	----	----	----
Anthracene-d10	1719-06-8	0.025	%		118	125	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		133	123	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB102	RB102	FB102	----	----
Client sampling date / time					05-Mar-2018 00:00	05-Mar-2018 00:00	05-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1804004-005	EM1804004-006	EM1804004-007	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		----	8.27	6.07	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		----	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		----	<0.0001	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L		----	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L		----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L		----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L		----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L		----	<0.01	<0.01	----	----
Tin	7440-31-5	0.001	mg/L		----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L		----	<0.005	<0.005	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	<0.0001	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		----	<0.01	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		----	<0.004	<0.004	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		----	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		----	<1	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		----	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		----	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		----	<5	<5	----	----
Methylene chloride	75-09-2	5	µg/L		----	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		----	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		----	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		----	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		----	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		----	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L		----	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				TB102	RB102	FB102	----	----
Client sampling date / time				05-Mar-2018 00:00	05-Mar-2018 00:00	05-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1804004-005	EM1804004-006	EM1804004-007	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	----	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	----	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	----	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	----	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	----	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	----	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	----	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	----	<5	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	----	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	----	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	----	<2	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	----	<2	<2	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB102	RB102	FB102	----	----
Client sampling date / time				05-Mar-2018 00:00	05-Mar-2018 00:00	05-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1804004-005	EM1804004-006	EM1804004-007	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	----	<2	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	----	<4	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	----	<2	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	----	<2	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	----	<2	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	----	<2	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	----	<2	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	----	<4	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	----	<4	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	----	<4	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	----	<4	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	----	<4	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	----	<100	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	----	<50	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	----	<50	<50	----	----
Dinoseb	88-85-7	50	µg/L	----	<50	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	----	<50	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	----	<0.5	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	----	<0.5	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	----	<0.5	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	<0.5	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	----	<0.5	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB102	RB102	FB102	----	----
Client sampling date / time					05-Mar-2018 00:00	05-Mar-2018 00:00	05-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1804004-005	EM1804004-006	EM1804004-007	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		----	95.4	89.0	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		----	92.2	93.7	----	----
Toluene-D8	2037-26-5	5	%		----	88.2	83.0	----	----
4-Bromofluorobenzene	460-00-4	5	%		----	96.5	85.8	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	28.1	31.3	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	69.6	71.1	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	74.0	72.2	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	77.6	76.8	----	----
Anthracene-d10	1719-06-8	1.0	%		----	96.2	90.6	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	105	106	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB102	RB102	FB102	----	----
Client sampling date / time					05-Mar-2018 00:00	05-Mar-2018 00:00	05-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1804004-005	EM1804004-006	EM1804004-007	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		----	38.8	37.9	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		----	111	97.3	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		----	79.6	72.2	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		----	96.2	88.2	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		----	100	92.0	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		----	93.2	85.2	----	----
Anthracene-d10	1719-06-8	0.25	%		----	103	94.4	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		----	105	94.2	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		93.4	93.0	94.8	----	----
Toluene-D8	2037-26-5	2	%		85.8	91.6	86.2	----	----
4-Bromofluorobenzene	460-00-4	2	%		99.7	108	97.5	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



Melbourne Office Address

180 Lonsdale Street, Melbourne 3000

Telephone: 613 8687 8000 Fax: 613 8687 8111

Completion Date / Turnaround

ASAP

Quote # / GHD Reference

ME/124/18

Page 1 of 1

Job Number 31/35006/0803		GHD Contact		Laboratory: ALS SPRINGVALE	
Project North East Link				Address:	
GHD Project Manager		GHD Contact David Quinn		Laboratory Contact: SHIRLEY LECORNU.	
GHD PM email		GHD Contact email David.Quinn@ghd.com.au			
Sample I.D.	Date	Time	Composite Sample	Sample Matrix	Container
1 NEL-BH109-0.2m	05/03	PM	/	S	J
2 " " -0.6m	"	"	/	S	J
3 " " -1.1m	"	"	/	S	J
4 " " -1.5m	"	"	/	S	J
5 TB102	"	"	/	W	V
6 RB102	"	"	/	W	VGP
7 FB102	"	"	/	W	VGP

URGENT

COURIER AND LABORATORY INSTRUCTIONS:

Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results.

Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Project Manager and GHD Contact with the GHD Job Number in the e-mail subject line.

Note email format: firstname.lastname@ghd.com

Results to be provided in ESDAT compatible format

SAMPLE COMMENTS

Environmental Division
Melbourne
Work Order Reference

EM1804004



Telephone : 61-3-8549 9600

SCANNED

TOTAL NUMBER OF SAMPLES:

21

GENERAL COMMENTS:

TOTAL NUMBER OF ESKIES:

1

SAMPLES/ESKY CHILLED? Y/N

Y

CC to: Mark Davidson (Aecom)
Nagaha Rosli (Aecom)

CUSTODY DETAILS:			
SAMPLER	Name	Date/Time Received	Date/Time Relinquished
	Scott Hilliard (GH)	PM 05/03/18	PM 05/03/18
GHD SERVICE CENTRE			
COURIER			
LABORATORY	ALC (ALS)	5.3.18 FF30	

Peter Ravlic

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Wednesday, 7 March 2018 2:30 PM
To: Shirley LeCornu; Melbourne Enviro Services
Cc: David Quinn; Menon, Venesa; Davidson, Mark (Melbourne)
Subject: RE: CoC for ALS Workorder : EM1804004 | Overall Description: North East Link

Hi,

Please analyse for:

1. NEL-BH109_0.2m = IWRG621
2. NEL-BH109_1.1m = IWRG621
3. RB102 = IWRG621 water equivalent
4. TB102 = Volatile TPH/BTEX
5. FB102 = IWRG621 water equivalent

At standard TAT. Thanks.

Nazuha Rosli

Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
nazuha.rosli@aecom.com

AECOM

Collins Square, Level 10, Tower Two, 727 Collins Street, Melbourne, VIC 3008
T +61 3 9653 1234 F +61 3 9654 7117
aecom.com

Imagine it. Delivered.

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From: David Quinn [mailto:David.Quinn@ghd.com]
Sent: Tuesday, 6 March 2018 8:42 AM
To: Rosli, Nazuha
Subject: FW: CoC for ALS Workorder : EM1804004 | Overall Description: North East Link

FYI – BH109

From: angel-no-reply@alsglobal.com [mailto:angel-no-reply@alsglobal.com]
Sent: Tuesday, 6 March 2018 6:06 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: CoC for ALS Workorder : EM1804004 | Overall Description: North East Link



Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 11 January 2018 2:35 PM
To: Shirley LeCornu
Subject: RE: EM1801198 - GHD - 31/35006/0803

Follow Up Flag: Follow up
Flag Status: Flagged

** No asbestos required*
** Asbestos only added if additional request is made*

*Thank
Shirley 28/2*

Hi Shirley,

There will be some more samples coming through so we'll hold off analysing at the moment, so they can be done in a batch.

The analysis will be VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Thanks,

David Quinn

Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

Please consider our environment before printing this email

From: Shirley LeCornu [<mailto:shirley.lecornu@alsglobal.com>]
Sent: Thursday, 11 January 2018 9:07 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1801198 - GHD - 31/35006/0803

Hi David

Can you please let me know analysis required for the samples we received yesterday. COC attached.

Thanks

Shirley

Shirley LeCornu
Client Services Officer – Springvale
Environmental



T +61 3 8549 9600 D +61 3 8549 9630
F +61 3 8549 9626
Shirley.lecornu@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

We are keen for your feedback! [Please click here for your 1 question survey](#)

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1804004

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060803</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : North East Link</p> <p>Sampler : SH</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9601</p> <p>Page : 1 of 3</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Dates

Date Samples Received : 05-Mar-2018 17:30	Issue Date : 07-Mar-2018
Client Requested Due : 13-Mar-2018	Scheduled Reporting Date : 13-Mar-2018
Date	

Delivery Details

Mode of Delivery : Carrier	Security Seal : Not Available
No. of coolers/boxes : 1	Temperature : 6.9°C - Ice present
Receipt Detail :	No. of samples received / analysed : 7 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB102	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB102	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB102	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB102	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB102	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB102	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1804004-001	05-Mar-2018 00:00	NEL-BH109_0.2m	✓	✓
EM1804004-003	05-Mar-2018 00:00	NEL-BH109_1.1m	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1804004-005	05-Mar-2018 00:00	TB102		✓
EM1804004-006	05-Mar-2018 00:00	RB102	✓	
EM1804004-007	05-Mar-2018 00:00	FB102	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

QUALITY CONTROL REPORT

Work Order	: EM1804004	Page	: 1 of 18
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 05-Mar-2018
Order number	: ----	Date Analysis Commenced	: 06-Mar-2018
C-O-C number	: ----	Issue Date	: 08-Mar-2018
Sampler	: SH		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 7		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1477502)									
EM1804004-001	NEL-BH109_0.2m	EA001: pH (CaCl2)	----	0.1	pH Unit	6.3	6.4	1.57	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1475257)									
EM1804004-001	NEL-BH109_0.2m	EA055: Moisture Content	----	1	%	19.6	19.8	0.970	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1474686)									
EM1804004-001	NEL-BH109_0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	40	39	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	6	34.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	24	32.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	30	30	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	63	69	10.0	0% - 50%		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1474685)									
EM1804004-001	NEL-BH109_0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1474807)									
EM1803767-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1803923-007	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1474808)									
EM1804004-003	NEL-BH109_1.1m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1804010-008	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1475218)									
EM1803937-017	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit

Page : 3 of 18
 Work Order : EM1804004
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1475218) - continued									
EM1804004-001	NEL-BH109_0.2m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1474720)									
EM1804004-001	NEL-BH109_0.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	370	390	4.70	No Limit
EM1804010-006	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	290	280	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1474645)									
EM1804004-001	NEL-BH109_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1474642)									
EM1804004-001	NEL-BH109_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1474642)									
EM1804004-001	NEL-BH109_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1474642)									
EM1804004-001	NEL-BH109_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1474643)							
EM1804004-001	NEL-BH109_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1474643) - continued									
EM1804004-001	NEL-BH109_0.2m	EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1474643)									
EM1804004-001	NEL-BH109_0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1474643)									
EM1804004-001	NEL-BH109_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1474643)									
EM1804004-001	NEL-BH109_0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1474643) - continued									
EM1804004-001	NEL-BH109_0.2m	EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1474642)									
EM1804004-001	NEL-BH109_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1474644)									
EM1804004-001	NEL-BH109_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1474642)									
EM1804004-001	NEL-BH109_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1474644)									
EM1804004-001	NEL-BH109_0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1477087)									
EM1803909-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.40	7.38	0.271	0% - 20%
EM1803913-006	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.35	7.41	0.813	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1475183)									
EM1803909-007	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1475183) - continued									
EM1803909-007	Anonymous	EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.014	0.012	9.94	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	0.02	0.02	0.00	No Limit
EM1804007-005	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.034	0.035	0.00	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1475185)									
EM1804004-006	RB102	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1475184)									
EM1803909-007	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1804007-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1475268)									
EM1803782-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	0.01	0.02	0.00	No Limit
EM1803904-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1477697)									
EM1803915-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1804012-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.001	<0.002	66.7	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1477089)									
EM1804004-007	FB102	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1804056-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1476933)									
EM1804018-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1804018-011	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1476933)									
EM1804018-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1476933) - continued									
EM1804018-001	Anonymous	EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1804018-011	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1476933)									
EM1804018-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1804018-011	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1476933)									
EM1804018-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1804018-011	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1476932)									
EM1804018-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1804018-011	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1476932)									
EM1804018-001	Anonymous	EP080: C6 - C10 Fraction	C6 C10	20	µg/L	<20	<20	0.00	No Limit

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 Work Order : EM1804004
 Client : GHD PTY LTD
 Project : 31350060803



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1476932) - continued									
EM1804018-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1476932)									
EM1804018-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1804018-011	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)		
		LCS	Low	High	
Result					
<5	21.7 mg/kg	88.1	79	113	
<1	4.64 mg/kg	86.8	85	109	
<5	32 mg/kg	84.6	78	108	
<5	40 mg/kg	88.3	78	106	
<2	7.9 mg/kg	88.6	86	112	
<2	55 mg/kg	94.0	82	111	
<5	5.37 mg/kg	101	93	109	
<2	2.1 mg/kg	94.4	80	108	
<5	5.2 mg/kg	91.7	88	116	
<5	60.8 mg/kg	94.5	82	111	
<0.1	2.57 mg/kg	96.6	77	104	
<0.5	40 mg/kg	81.9	80	120	
<0.5	40 mg/kg	89.8	80	120	
<1	20 mg/kg	94.4	80	110	
<40	400 mg/kg	99.2	77	106	
<0.1	1 mg/kg	101	63	118	
<0.2	2.1 mg/kg	100	74	118	
<0.5	2.1 mg/kg	101	70	124	
<0.5	2.1 mg/kg	96.7	71	122	
<0.5	4.2 mg/kg	92.0	70	118	
<0.5	2.1 mg/kg	94.3	76	116	
<0.5	2.1 mg/kg	93.6	74	114	
<1	0.6 mg/kg	98.0	77	111	



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1474642) - continued								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	116	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	107	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	104	68	107
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	95.0	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	94.5	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	95.2	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	106	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	107	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	98.4	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	107	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	103	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	95.6	64	124
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	100	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	102	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	76.2	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	96.5	73	117
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	82.2	69	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	75	114
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	71.0	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1474643)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	104	54	122
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	94.9	58	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	103	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	88.5	62	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	114	53	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	85.6	60	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	102	56	118
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	105	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	85.0	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1474643)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	95.0	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	109	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	92.9	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	89.2	53	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	110	43	120
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	102	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	92.5	59	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	89.9	47	125



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1474643) - continued								
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	99.8	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	74.1	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1474643)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	102	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	110	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	93.2	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	109	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	112	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	74.0	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	107	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	106	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	104	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	109	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	114	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	93.8	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	118	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	119	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	119	55	137
EP075I: Organochlorine Pesticides (QCLot: 1474643)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	106	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	102	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	105	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	105	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	112	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	104	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	108	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	109	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	109	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	110	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	116	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	107	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	110	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	115	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	105	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	112	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	109	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	111	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	105	59	134

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1475183)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.7	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.9	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.4	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	99.8	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.3	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	99.3	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1475185)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	97.2	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1475184)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	102	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1475268)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1477697)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	91.1	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1477089)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit						
EPK040P: Fluoride by PC Titrator (QCLot: 1477089) - continued								
EPK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	105	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1474773)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	92.0	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1476933)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	94.4	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1476933)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	88.1	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	91.3	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	102	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	93.7	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	98.4	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	88.9	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	85.4	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	104	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	90.0	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	104	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	87.9	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	87.8	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	107	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	86.9	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1476933)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	94.9	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	98.8	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	99.4	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	90.1	62	119
EP074G: Trihalomethanes (QCLot: 1476933)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	99.2	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1474774)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	60.2	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	57.2	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	62.0	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	64.8	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	75.8	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	2.5 µg/L	62.9	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	83.7	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	83.8	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	77.2	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	75.8	55	123



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1474774) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	81.3	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	82.0	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	78.1	56	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	80.3	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	79.6	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	78.0	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1474777)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	101	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	85.8	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	91.1	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	76.1	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	90.6	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	81.4	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	100	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5	2	µg/L	<2	20 µg/L	88.4	47	125
	8-90-2							
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	73.3	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1474777)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	36.3	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	79.5	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	65.7	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	93.3	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	110	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	80.0	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	34.4	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	93.7	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	109	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	110	32	135
EP075I: Organochlorine Pesticides (QCLot: 1474777)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	102	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	96.7	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	97.6	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	97.8	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	97.8	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	100	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	99.1	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	98.0	62	136



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075I: Organochlorine Pesticides (QCLot: 1474777) - continued								
EP075-EM: 4.4`-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	95.8	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1474775)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	101	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	108	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	103	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1476932)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	99.0	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1474775)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	102	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	103	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	110	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1476932)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	101	66	123
EP080: BTEXN (QCLot: 1476932)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	101	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	101	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	108	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	103	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	111	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	93.2	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1474686)							
EM1804004-002	NEL-BH109_0.6m	EG005T: Arsenic	7440-38-2	50 mg/kg	99.0	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	100.0	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	102	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	102	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	91.2	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	87.8	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	87.9	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	99.8	74	128



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1474685)							
EM1804004-002	NEL-BH109_0.6m	EG035T: Mercury	7439-97-6	5 mg/kg	88.6	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1474807)							
EM1803767-006	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	# 57.4	58	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1474808)							
EM1804004-004	NEL-BH109_1.5m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	68.4	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1475218)							
EM1803937-018	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	95.9	77	113
EK040T: Fluoride Total (QCLot: 1474720)							
EM1804004-002	NEL-BH109_0.6m	EK040T: Fluoride	16984-48-8	400 mg/kg	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1474645)							
EM1804004-004	NEL-BH109_1.5m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	107	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1474642)							
EM1804004-002	NEL-BH109_0.6m	EP074-UT: Benzene	71-43-2	2 mg/kg	110	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	113	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1474642)							
EM1804004-002	NEL-BH109_0.6m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	131	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	102	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	100	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1474643)							
EM1804004-002	NEL-BH109_0.6m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	112	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	96.6	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	89.8	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1474643)							
EM1804004-002	NEL-BH109_0.6m	EP075-EM: Phenol	108-95-2	1 mg/kg	106	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	66.8	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1474643)							
EM1804004-002	NEL-BH109_0.6m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	122	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	116	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1474642)							
EM1804004-002	NEL-BH109_0.6m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	99.3	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1474644)							
EM1804004-003	NEL-BH109_1.1m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	94.1	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	95.4	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	91.4	64	118

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Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1474642)							
EM1804004-002	NEL-BH109_0.6m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	90.4	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1474644)							
EM1804004-003	NEL-BH109_1.1m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	92.6	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	95.2	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	91.1	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1475183)							
EM1803909-007	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	108	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	97.9	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	98.2	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	99.0	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	99.9	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	109	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1475184)							
EM1804003-006	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	89.8	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1475268)							
EM1803821-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	85.2	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1477697)							
EM1803915-002	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	82.5	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1477089)							
EM1804012-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	105	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1476933)							
EM1804018-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	85.5	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	78.7	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1476933)							
EM1804018-002	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	86.3	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1476932)							
EM1804018-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	71.6	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1476932)							
EM1804018-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	72.6	44	122
EP080: BTEXN (QCLot: 1476932)							
EM1804018-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	91.5	68	130
		EP080: Toluene	108-88-3	20 µg/L	84.8	72	132

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QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1804004	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 05-Mar-2018
Site	: North East Link	Issue Date	: 08-Mar-2018
Sampler	: SH	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG048: Hexavalent Chromium (Alkaline Digest)	EM1803767--006	Anonymous	Hexavalent Chromium	18540-29-9	57.4 %	58-114%	Recovery less than lower data quality objective

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075T: Base/Neutral Extractable Surrogates	EM1804004-001	NEL-BH109_0.2m	1,2-Dichlorobenzene-D4	2199-69-1	121 %	31-117 %	Recovery greater than upper data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RB102, FB102	----	----	----	07-Mar-2018	05-Mar-2018	2

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Control Samples (LCS)					
Hexavalent Chromium by Alkaline Digestion and DA Finish	3	38	7.89	10.00	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	07-Mar-2018	12-Mar-2018	✓	07-Mar-2018	07-Mar-2018	✓	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	----	----	----	06-Mar-2018	19-Mar-2018	✓	
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	01-Sep-2018	✓	06-Mar-2018	01-Sep-2018	✓	
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	02-Apr-2018	✓	06-Mar-2018	02-Apr-2018	✓	
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	02-Apr-2018	✓	06-Mar-2018	13-Mar-2018	✓	
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	19-Mar-2018	✓	07-Mar-2018	20-Mar-2018	✓	
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	02-Apr-2018	✓	08-Mar-2018	02-Apr-2018	✓	
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	19-Mar-2018	✓	07-Mar-2018	15-Apr-2018	✓	
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	12-Mar-2018	✓	07-Mar-2018	12-Mar-2018	✓	
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	12-Mar-2018	✓	07-Mar-2018	12-Mar-2018	✓	
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	12-Mar-2018	✓	07-Mar-2018	12-Mar-2018	✓	



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	19-Mar-2018	✔	07-Mar-2018	15-Apr-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	19-Mar-2018	✔	07-Mar-2018	15-Apr-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	19-Mar-2018	✔	07-Mar-2018	15-Apr-2018	✔
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	19-Mar-2018	✔	07-Mar-2018	15-Apr-2018	✔
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	12-Mar-2018	✔	07-Mar-2018	12-Mar-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH109_0.2m, NEL-BH109_1.1m	05-Mar-2018	06-Mar-2018	12-Mar-2018	✔	07-Mar-2018	12-Mar-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
RB102,	FB102	05-Mar-2018	----	----	----	07-Mar-2018	05-Mar-2018	✗
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)								
RB102,	FB102	05-Mar-2018	----	----	----	06-Mar-2018	01-Sep-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)								
RB102,	FB102	05-Mar-2018	----	----	----	07-Mar-2018	19-Mar-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)								
RB102,	FB102	05-Mar-2018	----	----	----	06-Mar-2018	02-Apr-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)								
RB102,	FB102	05-Mar-2018	----	----	----	07-Mar-2018	19-Mar-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)								
RB102,	FB102	05-Mar-2018	----	----	----	07-Mar-2018	02-Apr-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066) RB102, FB102	05-Mar-2018	06-Mar-2018	12-Mar-2018	✓	07-Mar-2018	15-Apr-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074) RB102, FB102	05-Mar-2018	07-Mar-2018	19-Mar-2018	✓	07-Mar-2018	19-Mar-2018	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) RB102, FB102	05-Mar-2018	07-Mar-2018	19-Mar-2018	✓	07-Mar-2018	19-Mar-2018	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) RB102, FB102	05-Mar-2018	07-Mar-2018	19-Mar-2018	✓	07-Mar-2018	19-Mar-2018	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074) RB102, FB102	05-Mar-2018	07-Mar-2018	19-Mar-2018	✓	07-Mar-2018	19-Mar-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB102, FB102	05-Mar-2018	06-Mar-2018	12-Mar-2018	✓	07-Mar-2018	15-Apr-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) RB102, FB102	05-Mar-2018	06-Mar-2018	12-Mar-2018	✓	07-Mar-2018	15-Apr-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) RB102, FB102	05-Mar-2018	06-Mar-2018	12-Mar-2018	✓	07-Mar-2018	15-Apr-2018	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075-EM) RB102, FB102	05-Mar-2018	06-Mar-2018	12-Mar-2018	✓	07-Mar-2018	15-Apr-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) RB102, FB102	05-Mar-2018	06-Mar-2018	12-Mar-2018	✓	07-Mar-2018	15-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB102, FB102	05-Mar-2018	07-Mar-2018	19-Mar-2018	✓	07-Mar-2018	19-Mar-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) RB102, FB102	05-Mar-2018	06-Mar-2018	12-Mar-2018	✓	07-Mar-2018	15-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB102, FB102	05-Mar-2018	07-Mar-2018	19-Mar-2018	✓	07-Mar-2018	19-Mar-2018	✓



Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)	RB102,	05-Mar-2018	07-Mar-2018	19-Mar-2018	✔	07-Mar-2018	19-Mar-2018	✔
TB102,								
FB102								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	3	38	7.89	10.00	✗	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	* EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	* EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1804502**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **SH**
Site : **North East Link**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **11**
No. of samples analysed : **11**

Page : 1 of 19
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 13-Mar-2018 16:10
Date Analysis Commenced : 14-Mar-2018
Issue Date : 16-Mar-2018 18:04



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH124_0.1m	NEL-BH124_0.5m	NEL-BH124_1.1m	NEL-BH124_1.5m	NEL-BH110_0.1m
Client sampling date / time					13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00
Compound	CAS Number	LOR	Unit		EM1804502-001	EM1804502-002	EM1804502-003	EM1804502-004	EM1804502-005
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.6	7.1	7.0	6.8	5.4
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		8.2	23.0	14.5	18.8	16.4
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	6
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		30	7	<5	<5	9
Lead	7439-92-1	5	mg/kg		<5	6	5	5	17
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		76	11	8	8	8
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		41	16	16	18	41
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		480	180	300	250	270
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH124_0.1m	NEL-BH124_0.5m	NEL-BH124_1.1m	NEL-BH124_1.5m	NEL-BH110_0.1m
Client sampling date / time					13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00
Compound	CAS Number	LOR	Unit		EM1804502-001	EM1804502-002	EM1804502-003	EM1804502-004	EM1804502-005
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH124_0.1m	NEL-BH124_0.5m	NEL-BH124_1.1m	NEL-BH124_1.5m	NEL-BH110_0.1m
Client sampling date / time				13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	
Compound	CAS Number	LOR	Unit	EM1804502-001	EM1804502-002	EM1804502-003	EM1804502-004	EM1804502-005	
				Result	Result	Result	Result	Result	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH124_0.1m	NEL-BH124_0.5m	NEL-BH124_1.1m	NEL-BH124_1.5m	NEL-BH110_0.1m
Client sampling date / time				13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00
Compound	CAS Number	LOR	Unit	EM1804502-001	EM1804502-002	EM1804502-003	EM1804502-004	EM1804502-005
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH124_0.1m	NEL-BH124_0.5m	NEL-BH124_1.1m	NEL-BH124_1.5m	NEL-BH110_0.1m
Client sampling date / time					13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00
Compound	CAS Number	LOR	Unit		EM1804502-001	EM1804502-002	EM1804502-003	EM1804502-004	EM1804502-005
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		90.5	92.6	80.3	102	76.8
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		81.8	80.9	88.8	91.0	89.3
Toluene-D8	2037-26-5	0.1	%		77.5	78.9	83.7	88.3	85.9
4-Bromofluorobenzene	460-00-4	0.1	%		76.6	78.3	88.7	85.1	82.3
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		108	94.1	103	93.9	120
2-Chlorophenol-D4	93951-73-6	0.025	%		87.1	74.9	82.4	77.5	96.2
2,4,6-Tribromophenol	118-79-6	0.025	%		103	89.0	94.5	90.5	95.2
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		88.1	75.3	78.7	78.6	102
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		89.0	76.2	83.2	76.5	98.3
2-Fluorobiphenyl	321-60-8	0.025	%		108	97.4	102	97.2	102
Anthracene-d10	1719-06-8	0.025	%		112	104	106	103	108
4-Terphenyl-d14	1718-51-0	0.025	%		119	111	113	111	107



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH110_0.5m	NEL-BH110_1.0m	NEL-BH110_1.5m	----	----
Client sampling date / time					13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1804502-006	EM1804502-007	EM1804502-008	-----	-----
					Result	Result	Result	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		5.7	6.6	6.8	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		19.3	21.8	20.6	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		8	8	7	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Copper	7440-50-8	5	mg/kg		33	23	23	----	----
Lead	7439-92-1	5	mg/kg		22	13	9	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg		34	32	35	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	----	----
Zinc	7440-66-6	5	mg/kg		52	59	76	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		490	600	460	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH110_0.5m	NEL-BH110_1.0m	NEL-BH110_1.5m	----	----
Client sampling date / time					13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1804502-006	EM1804502-007	EM1804502-008	-----	-----
					Result	Result	Result	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH110_0.5m	NEL-BH110_1.0m	NEL-BH110_1.5m	----	----
Client sampling date / time					13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1804502-006	EM1804502-007	EM1804502-008	-----	-----
					Result	Result	Result	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH110_0.5m	NEL-BH110_1.0m	NEL-BH110_1.5m	----	----
Client sampling date / time				13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1804502-006	EM1804502-007	EM1804502-008	-----	-----
				Result	Result	Result	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH110_0.5m	NEL-BH110_1.0m	NEL-BH110_1.5m	----	----
Client sampling date / time					13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1804502-006	EM1804502-007	EM1804502-008	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		83.8	95.6	83.4	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		78.9	83.5	74.8	----	----
Toluene-D8	2037-26-5	0.1	%		76.5	81.0	79.3	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		75.0	78.7	76.3	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		115	115	103	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		92.4	92.4	84.2	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		91.8	88.6	78.4	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		95.8	90.4	91.5	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		93.2	94.6	88.2	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		98.1	99.4	93.7	----	----
Anthracene-d10	1719-06-8	0.025	%		104	104	98.1	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		105	105	100	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB103	FB103	RB103	----	----
Client sampling date / time				13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1804502-009	EM1804502-010	EM1804502-011	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	5.80	5.48	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	----	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L	----	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	----	<0.01	<0.01	----	----
Tin	7440-31-5	0.001	mg/L	----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	----	<0.005	<0.005	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	----	<0.01	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	----	<0.004	<0.004	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	----	0.3	0.2	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	----	<1	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	----	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	----	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	----	<5	<5	----	----
Methylene chloride	75-09-2	5	µg/L	----	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	----	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	----	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	----	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	----	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	----	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L	----	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				TB103	FB103	RB103	----	----
Client sampling date / time				13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1804502-009	EM1804502-010	EM1804502-011	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	----	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	----	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	----	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	----	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	----	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	----	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	----	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	----	<5	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	----	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	----	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	----	<2	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	----	<2	<2	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB103	FB103	RB103	----	----
Client sampling date / time				13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1804502-009	EM1804502-010	EM1804502-011	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	----	<2	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	----	<4	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	----	<2	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	----	<2	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	----	<2	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	----	<2	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	----	<2	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	----	<4	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	----	<4	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	----	<4	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	----	<4	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	----	<4	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	----	<100	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	----	<50	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	----	<50	<50	----	----
Dinoseb	88-85-7	50	µg/L	----	<50	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	----	<50	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	----	<0.5	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	----	<0.5	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	----	<0.5	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	<0.5	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	----	<0.5	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB103	FB103	RB103	----	----
Client sampling date / time					13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1804502-009	EM1804502-010	EM1804502-011	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		----	104	87.7	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		----	96.3	104	----	----
Toluene-D8	2037-26-5	5	%		----	93.1	97.5	----	----
4-Bromofluorobenzene	460-00-4	5	%		----	100	101	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	26.2	25.2	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	70.1	66.0	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	72.1	51.9	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	80.8	74.7	----	----
Anthracene-d10	1719-06-8	1.0	%		----	95.2	80.2	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	109	90.1	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB103	FB103	RB103	----	----
Client sampling date / time					13-Mar-2018 00:00	13-Mar-2018 00:00	13-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1804502-009	EM1804502-010	EM1804502-011	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		----	36.6	34.1	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		----	98.6	91.0	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		----	85.6	80.0	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		----	93.6	87.6	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		----	97.2	92.1	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		----	104	96.2	----	----
Anthracene-d10	1719-06-8	0.25	%		----	102	97.0	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		----	118	110	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		83.5	88.7	96.1	----	----
Toluene-D8	2037-26-5	2	%		97.9	91.1	94.9	----	----
4-Bromofluorobenzene	460-00-4	2	%		119	109	100	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129



Quote # / GHD Reference

ASAP

ME / 124 / 18

Job Number 3135006/0410		GHD Contact David Quinn		Laboratory: ALS ALS Springvale	
Project NEL - Contamination		GHD Project Manager		Address:	
GHD PM email David.quinn@ghd.com		GHD Contact David Quinn		Laboratory Contact: Shirley Lelorne	
GHD Contact email		GHD Contact email		Container	
Sample I.D.		Date		Time	
Composite Sample		Sample Matrix		Type	
S: Soil, Sh: Sludge		W: Water, A: Air		Number	
GW: Groundwater		U: Soil jar, B: Bag		Volume (mL)	
V: Vial, G: glass bottle		P: plastic bottle		HOLD	
NEL-BH124-0.1m		13/03/18		AM	
" -0.5m		"		"	
" -1.1m		"		"	
" -1.5m		"		"	
NEL-BH110-0.1m		"		"	
" -0.5m		"		"	
" -1.0m		"		"	
" -1.5m		"		"	
TB103		"		"	
FB103		"		"	
RB103		"		"	
TOTAL NUMBER OF SAMPLES:		25		GENERAL COMMENTS:	
TOTAL NUMBER OF ESQIES:		1		CC to: Mark Davidson (AECOM)	
SAMPLES/ESKY CHILLED? Y/N		Y		Nuzuh Rost (AECOM)	
CUSTODY DETAILS:					
Name		Date/Time Received		Date/Time Relinquished	
SCOTT HILLIARD (GHD)		AM 13/03/18		PM 13/03/18	
GHD SERVICE CENTRE					
COURIER					
LABORATORY		18den (ALS)		13-3-18 1610	

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Thursday, 11 January 2018 2:35 PM
To: Shirley LeCornu
Subject: RE: EM1801198 - GHD - 31/35006/0803

Follow Up Flag: Follow up
Flag Status: Flagged

** No asbestos required*
** Asbestos only added if additional request is made*
Thank
Shel 18/2

Hi Shirley,

There will be some more samples coming through so we'll hold off analysing at the moment, so they can be done in a batch.

The analysis will be VIC EPA IWRG621 and asbestos (presence / absence) on standard TAT.

Thanks,

David Quinn

Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD

T: 03 8687 8627 | V: 318 627 | E: david.quinn@ghd.com
Level 8, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

Please consider our environment before printing this email

From: Shirley LeCornu [<mailto:shirley.lecornu@alsglobal.com>]
Sent: Thursday, 11 January 2018 9:07 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: FW: EM1801198 - GHD - 31/35006/0803

Hi David

Can you please let me know analysis required for the samples we received yesterday. COC attached.

Thanks

Shirley

Shirley LeCornu
Client Services Officer – Springvale
Environmental



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2-4 Westall Rd
Springvale Vic 3171
Australia

We are keen for your feedback! [Please click here for your 1 question survey](#)

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1804502

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: 31350060910	Page	: 1 of 4
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link		
Sampler	: SH		

Dates

Date Samples Received	: 13-Mar-2018 16:10	Issue Date	: 14-Mar-2018
Client Requested Due Date	: 16-Mar-2018	Scheduled Reporting Date	: 16-Mar-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 6.0°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 11 / 11

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
FB103	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB103	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
FB103	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB103	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
FB103	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB103	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1804502-001	13-Mar-2018 00:00	NEL-BH124_0.1m	✓	✓
EM1804502-002	13-Mar-2018 00:00	NEL-BH124_0.5m	✓	✓
EM1804502-003	13-Mar-2018 00:00	NEL-BH124_1.1m	✓	✓
EM1804502-004	13-Mar-2018 00:00	NEL-BH124_1.5m	✓	✓
EM1804502-005	13-Mar-2018 00:00	NEL-BH110_0.1m	✓	✓
EM1804502-006	13-Mar-2018 00:00	NEL-BH110_0.5m	✓	✓
EM1804502-007	13-Mar-2018 00:00	NEL-BH110_1.0m	✓	✓
EM1804502-008	13-Mar-2018 00:00	NEL-BH110_1.5m	✓	✓



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1804502-009	13-Mar-2018 00:00	TB103		✓
EM1804502-010	13-Mar-2018 00:00	FB103	✓	
EM1804502-011	13-Mar-2018 00:00	RB103	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1804502	Page	: 1 of 20
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 13-Mar-2018
Order number	:	Date Analysis Commenced	: 14-Mar-2018
C-O-C number	: ----	Issue Date	: 16-Mar-2018
Sampler	: SH		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 11		
No. of samples analysed	: 11		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1497326)									
EM1804393-013	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.2	7.2	0.00	0% - 20%
EM1804470-030	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.7	6.5	3.03	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1497327)									
EM1804502-007	NEL-BH110_1.0m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.6	6.7	1.50	0% - 20%
EM1804539-008	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.0	7.7	3.82	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1495575)									
EM1804393-013	Anonymous	EA055: Moisture Content	----	1	%	5.8	6.4	9.23	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1497251)									
EM1804393-013	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	15	14	9.95	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	21	12.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	37	29	23.4	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	43	40	8.13	No Limit
EM1804530-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	20	24	19.0	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	9	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1497251) - continued									
EM1804530-001	Anonymous	EG005T: Lead	7439-92-1	5	mg/kg	11	14	22.8	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	17	20	17.4	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1497250)									
EM1804393-013	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1804530-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1494597)									
EM1804468-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1804502-004	NEL-BH124_1.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1494793)									
EM1804391-033	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1804394-032	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	1	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1494795)									
EM1804502-003	NEL-BH124_1.1m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1494391)									
EM1804451-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	320	290	7.89	No Limit
EM1804487-008	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	150	160	7.21	No Limit
EK040T: Fluoride Total (QC Lot: 1494392)									
EM1804502-005	NEL-BH110_0.1m	EK040T: Fluoride	16984-48-8	40	mg/kg	270	260	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1494551)									
EM1804235-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1804420-012	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.4	<0.4	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1494282)									
EM1804235-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1804502-003	NEL-BH124_1.1m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1494282)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074H: Naphthalene (QC Lot: 1494282) - continued									
EM1804235-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1804502-003	NEL-BH124_1.1m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1494282)									
EM1804235-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1804502-003	NEL-BH124_1.1m	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1494282) - continued									
EM1804502-003	NEL-BH124_1.1m	EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1494548)									
EM1804235-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.06	<0.06	0.00	No Limit
		0-2							
EM1804420-012	Anonymous	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.25	<0.26	0.00	No Limit
EM1804235-001	Anonymous	0-2							
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
EM1804420-012	Anonymous	EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<10	<10	0.00	No Limit
EM1804420-012	Anonymous	EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1494548) - continued									
EM1804420-012	Anonymous	EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1494548)									
EM1804235-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	1.1	1.2	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	1.1	1.2	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	0.6	0.6	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	0.6	0.6	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	1.4	1.4	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.8	0.8	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenzo(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.6	0.6	0.00	No Limit		
EM1804420-012	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenzo(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1494548)									
EM1804235-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1494548) - continued									
EM1804235-001	Anonymous	EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	0.07	0.06	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	0.03	0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1804420-012	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.13	<0.13	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1494282)									
EM1804235-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1804502-003	NEL-BH124_1.1m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

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 Work Order : EM1804502
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1494550)									
EM1804235-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	120	110	14.5	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1804420-012	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	----	240	12.9	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	----	930	15.6	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	----	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1494282)									
EM1804235-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1804502-003	NEL-BH124_1.1m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1494550)									
EM1804235-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	130	110	15.7	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1804420-012	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	----	780	14.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	----	1150	16.1	0% - 50%
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	----	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1496856)									
EM1804502-011	RB103	EA005-P: pH Value	----	0.01	pH Unit	5.48	5.72	4.28	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1494981)									
EM1804505-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.020	0.020	0.00	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.007	0.006	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.005	0.005	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.010	0.010	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1804235-012	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1494981) - continued									
EM1804235-012	Anonymous	EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1494982)									
EM1804235-012	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1494983)									
EM1804505-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1804235-012	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1497984)									
EM1804295-003	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1494305)									
EM1804327-006	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1804352-009	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.002	<0.002	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1494307)									
EM1804502-011	RB103	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1496858)									
EM1804502-011	RB103	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1494736)									
EM1804502-010	FB103	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1494736)									
EM1804502-010	FB103	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1494736)									
EM1804502-010	FB103	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit

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 Work Order : EM1804502
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074G: Trihalomethanes (QC Lot: 1494736)									
EM1804502-010	FB103	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1494735)									
EM1804502-010	FB103	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1494735)									
EM1804502-010	FB103	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1494735)									
EM1804502-010	FB103	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
	Spike	Spike Recovery (%)	Recovery Limits (%)	
	Concentration	LCS	Low	High
Result				
<5	21.7 mg/kg	93.8	79	113
<1	4.64 mg/kg	88.0	85	109
<5	32 mg/kg	92.4	78	108
<5	40 mg/kg	91.5	78	106
<2	7.9 mg/kg	96.2	86	112
<2	55 mg/kg	96.2	82	111
<5	5.37 mg/kg	100	93	109
<2	2.1 mg/kg	92.8	80	108
<5	5.2 mg/kg	92.3	88	116
<5	60.8 mg/kg	97.6	82	111
<0.1	2.57 mg/kg	80.5	77	104
<0.5	40 mg/kg	80.7	80	120
<1	20 mg/kg	89.0	80	110
<1	20 mg/kg	89.0	80	110
<40	400 mg/kg	99.2	77	106
<40	400 mg/kg	98.2	77	106
<0.1	1 mg/kg	# 153	63	118
<0.2	2.1 mg/kg	100.0	74	118
<0.5	2.1 mg/kg	98.3	70	124
<0.5	2.1 mg/kg	105	71	122
<0.5	4.2 mg/kg	92.3	70	118
<0.5	2.1 mg/kg	95.3	76	116
<0.5	2.1 mg/kg	95.7	74	114



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074H: Naphthalene (QCLot: 1494282) - continued								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	94.8	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1494282)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	113	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	104	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	103	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	98.3	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	98.3	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	97.6	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	101	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	98.8	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	103	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	93.5	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	104	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	96.4	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	100	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	100	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	74.3	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	99.9	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	83.8	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	90.3	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	72.3	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1494548)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	94.0	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	81.8	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	99.8	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	93.1	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	102	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	90.1	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	101	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	94.1	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	85.0	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1494548)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	87.1	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	88.7	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	87.9	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	84.1	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	89.2	43	120



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1494548) - continued								
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	# 135	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	108	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	102	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	114	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	116	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1494548)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	104	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	110	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	109	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	108	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	111	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	73.6	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	110	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	111	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	108	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	113	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	113	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	109	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	110	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	108	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	111	55	137
EP075I: Organochlorine Pesticides (QCLot: 1494548)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	107	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	103	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	108	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	105	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	111	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	108	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	108	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	107	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	109	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	108	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	87.9	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	114	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	112	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	102	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	125	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	113	66	135



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EP075I: Organochlorine Pesticides (QCLot: 1494548) - continued								
EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	112	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	113	63	139
EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	110	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	113	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1494282)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	87.8	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1494550)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	80.4	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	90.7	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	87.7	77	116
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1494282)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	84.9	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE	10	mg/kg	<10	----	----	----	----
	X							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1494550)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	83.8	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	91.0	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	77.7	68	124

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020F: Dissolved Metals by ICP-MS (QCLot: 1494981)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.5	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.1	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.4	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	92.7	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	93.0	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	90.6	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	95.8	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	96.8	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.3	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1494982)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	97.6	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1494983)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.3	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1497984)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	100	90	114



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1494305)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	91.7	80	110
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1494307)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	90.4	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1496858)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	100	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1494676)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	91.4	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1494736)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	98.6	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1494736)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	108	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	98.4	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	101	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	99.2	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	103	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	96.0	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	97.3	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	97.7	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	103	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	97.9	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	# 139	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	94.0	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	94.6	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	90.9	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1494736)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	97.9	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	96.7	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	95.3	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	91.1	62	119
EP074G: Trihalomethanes (QCLot: 1494736)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	102	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1494677)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	70.3	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	76.8	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	77.4	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	82.3	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	84.6	57	119



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit	Result					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1494677) - continued								
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	2.5 µg/L	78.4	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	83.4	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	85.0	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	76.9	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	77.1	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	89.0	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	87.6	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	87.0	56	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	87.2	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	86.6	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	84.6	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1494675)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	100	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	90.4	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	107	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	98.1	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	112	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	98.2	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	113	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5	2	µg/L	<2	20 µg/L	93.2	47	125
	8-90-2							
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	104	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1494675)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	39.5	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	88.3	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	76.7	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	93.5	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	118	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	# 133	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	31.6	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	104	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	116	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	129	32	135
EP075I: Organochlorine Pesticides (QCLot: 1494675)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	112	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	115	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	113	59	133



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP075I: Organochlorine Pesticides (QCLot: 1494675) - continued								
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	115	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	113	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	115	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	115	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	110	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	114	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1494678)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	126	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	116	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	113	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1494735)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	107	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1494678)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	119	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	112	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	119	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1494735)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	104	66	123
EP080: BTEXN (QCLot: 1494735)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	107	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	110	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	111	73	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	114	72	131
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	121	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	96.3	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
					MS	Low	High
Client sample ID	Method: Compound	CAS Number					
EG005T: Total Metals by ICP-AES (QCLot: 1497251)							
EM1804502-001	NEL-BH124_0.1m	EG005T: Arsenic	7440-38-2	50 mg/kg	95.2	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	87.9	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	86.2	82	124



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) LowHigh	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number				
EG005T: Total Metals by ICP-AES (QCLot: 1497251) - continued							
EM1804502-001	NEL-BH124_0.1m	EG005T: Lead	7439-92-1	50 mg/kg	89.4	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	92.4	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	90.0	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	84.6	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	88.8	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1497250)							
EM1804502-001	NEL-BH124_0.1m	EG035T: Mercury	7439-97-6	5 mg/kg	85.2	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1494597)							
EM1804468-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	63.8	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1494793)							
EM1804391-049	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	93.3	77	113
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1494795)							
EM1804502-004	NEL-BH124_1.5m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	85.6	77	113
EK040T: Fluoride Total (QCLot: 1494391)							
EM1804468-001	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	105	70	130
EK040T: Fluoride Total (QCLot: 1494392)							
EM1804502-006	NEL-BH110_0.5m	EK040T: Fluoride	16984-48-8	400 mg/kg	97.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1494551)							
EM1804235-008	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	101	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1494282)							
EM1804235-002	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	120	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	119	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1494282)							
EM1804235-002	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	135	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	110	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	120	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1494548)							
EM1804235-005	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	107	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	93.4	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	65.3	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1494548)							
EM1804235-005	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	102	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	78.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1494548)							
EM1804235-005	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	108	46	138

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1494548) - continued							
EM1804235-005	Anonymous	EP075-EM: Pyrene	129-00-0	1 mg/kg	107	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1494282)							
EM1804235-002	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	94.1	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1494550)							
EM1804330-001	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	83.9	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	91.4	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	88.6	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1494282)							
EM1804235-002	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	88.6	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1494550)							
EM1804330-001	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	86.1	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	91.6	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	82.0	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1494981)							
EM1804235-012	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	93.0	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	93.6	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	87.6	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.0	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	89.1	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	92.0	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1494983)							
EM1804235-014	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	98.9	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1497984)							
EM1804502-010	FB103	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	90.0	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1494305)							
EM1804327-007	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	82.8	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1494736)							
EM1804502-011	RB103	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	111	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	89.3	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1494736)							
EM1804502-011	RB103	EP074: Chlorobenzene	108-90-7	20 µg/L	101	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1494735)							

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Work Order : EM1804502
Client : GHD PTY LTD
Project : 31350060910



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1494735) - continued							
EM1804502-011	RB103	EP080: C6 - C9 Fraction	----	280 µg/L	94.7	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1494735)							
EM1804502-011	RB103	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	87.7	44	122
EP080: BTEXN (QCLot: 1494735)							
EM1804502-011	RB103	EP080: Benzene	71-43-2	20 µg/L	106	68	130
		EP080: Toluene	108-88-3	20 µg/L	111	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1804502**

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Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Project : **31350060910**
Site : **North East Link**
Sampler : **SH**
Order number :

Laboratory : **Environmental Division Melbourne**
Telephone : **+61-3-8549 9630**
Date Samples Received : **13-Mar-2018**
Issue Date : **16-Mar-2018**
No. of samples received : **11**
No. of samples analysed : **11**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP066: Polychlorinated Biphenyls (PCB)	QC-1494551-001	----	Total Polychlorinated biphenyls	----	153 %	63-118%	Recovery greater than upper control limit
EP075A: Phenolic Compounds (Non-halogenated)	QC-1494548-001	----	2,4-Dinitrophenol	51-28-5	135 %	23-125%	Recovery greater than upper control limit

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP074E: Halogenated Aliphatic Compounds	QC-1494736-001	----	Tetrachloroethene	127-18-4	139 %	75-119%	Recovery greater than upper control limit
EP075A: Phenolic Compounds (Non-halogenated)	QC-1494675-001	----	2,4-Dinitrophenol	51-28-5	133 %	21-130%	Recovery greater than upper control limit

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
FB103, RB103	----	----	----	15-Mar-2018	13-Mar-2018	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Fluoride by PC Titrator	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	1	21	4.76	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
NEL-BH124_0.1m, NEL-BH124_1.1m, NEL-BH110_0.1m, NEL-BH110_1.0m,	NEL-BH124_0.5m, NEL-BH124_1.5m, NEL-BH110_0.5m, NEL-BH110_1.5m	13-Mar-2018	15-Mar-2018	20-Mar-2018	✔	15-Mar-2018	15-Mar-2018	✔
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
NEL-BH124_0.1m, NEL-BH124_1.1m, NEL-BH110_0.1m, NEL-BH110_1.0m,	NEL-BH124_0.5m, NEL-BH124_1.5m, NEL-BH110_0.5m, NEL-BH110_1.5m	13-Mar-2018	----	----	----	14-Mar-2018	27-Mar-2018	✔
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
NEL-BH124_0.1m, NEL-BH124_1.1m, NEL-BH110_0.1m, NEL-BH110_1.0m,	NEL-BH124_0.5m, NEL-BH124_1.5m, NEL-BH110_0.5m, NEL-BH110_1.5m	13-Mar-2018	15-Mar-2018	09-Sep-2018	✔	15-Mar-2018	09-Sep-2018	✔
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
NEL-BH124_0.1m, NEL-BH124_1.1m, NEL-BH110_0.1m, NEL-BH110_1.0m,	NEL-BH124_0.5m, NEL-BH124_1.5m, NEL-BH110_0.5m, NEL-BH110_1.5m	13-Mar-2018	15-Mar-2018	10-Apr-2018	✔	15-Mar-2018	10-Apr-2018	✔
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)								
NEL-BH124_0.1m, NEL-BH124_1.1m, NEL-BH110_0.1m, NEL-BH110_1.0m,	NEL-BH124_0.5m, NEL-BH124_1.5m, NEL-BH110_0.5m, NEL-BH110_1.5m	13-Mar-2018	14-Mar-2018	10-Apr-2018	✔	14-Mar-2018	21-Mar-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)		13-Mar-2018	14-Mar-2018	27-Mar-2018	✔	15-Mar-2018	28-Mar-2018	✔
NEL-BH124_0.1m,	NEL-BH124_0.5m,							
NEL-BH124_1.1m,	NEL-BH124_1.5m,							
NEL-BH110_0.1m,	NEL-BH110_0.5m,							
NEL-BH110_1.0m,	NEL-BH110_1.5m							
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)		13-Mar-2018	14-Mar-2018	10-Apr-2018	✔	15-Mar-2018	10-Apr-2018	✔
NEL-BH124_0.1m,	NEL-BH124_0.5m,							
NEL-BH124_1.1m,	NEL-BH124_1.5m,							
NEL-BH110_0.1m,	NEL-BH110_0.5m,							
NEL-BH110_1.0m,	NEL-BH110_1.5m							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)		13-Mar-2018	14-Mar-2018	27-Mar-2018	✔	15-Mar-2018	23-Apr-2018	✔
NEL-BH124_0.1m,	NEL-BH124_0.5m,							
NEL-BH124_1.1m,	NEL-BH124_1.5m,							
NEL-BH110_0.1m,	NEL-BH110_0.5m,							
NEL-BH110_1.0m,	NEL-BH110_1.5m							
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)		13-Mar-2018	14-Mar-2018	20-Mar-2018	✔	15-Mar-2018	20-Mar-2018	✔
NEL-BH124_0.1m,	NEL-BH124_0.5m,							
NEL-BH124_1.1m,	NEL-BH124_1.5m,							
NEL-BH110_0.1m,	NEL-BH110_0.5m,							
NEL-BH110_1.0m,	NEL-BH110_1.5m							
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)		13-Mar-2018	14-Mar-2018	20-Mar-2018	✔	15-Mar-2018	20-Mar-2018	✔
NEL-BH124_0.1m,	NEL-BH124_0.5m,							
NEL-BH124_1.1m,	NEL-BH124_1.5m,							
NEL-BH110_0.1m,	NEL-BH110_0.5m,							
NEL-BH110_1.0m,	NEL-BH110_1.5m							
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)		13-Mar-2018	14-Mar-2018	20-Mar-2018	✔	15-Mar-2018	20-Mar-2018	✔
NEL-BH124_0.1m,	NEL-BH124_0.5m,							
NEL-BH124_1.1m,	NEL-BH124_1.5m,							
NEL-BH110_0.1m,	NEL-BH110_0.5m,							
NEL-BH110_1.0m,	NEL-BH110_1.5m							
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)		13-Mar-2018	14-Mar-2018	27-Mar-2018	✔	15-Mar-2018	23-Apr-2018	✔
NEL-BH124_0.1m,	NEL-BH124_0.5m,							
NEL-BH124_1.1m,	NEL-BH124_1.5m,							
NEL-BH110_0.1m,	NEL-BH110_0.5m,							
NEL-BH110_1.0m,	NEL-BH110_1.5m							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH124_0.1m, NEL-BH124_1.1m, NEL-BH110_0.1m, NEL-BH110_1.0m, NEL-BH124_0.5m, NEL-BH124_1.5m, NEL-BH110_0.5m, NEL-BH110_1.5m	13-Mar-2018	14-Mar-2018	27-Mar-2018	✔	15-Mar-2018	23-Apr-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH124_0.1m, NEL-BH124_1.1m, NEL-BH110_0.1m, NEL-BH110_1.0m, NEL-BH124_0.5m, NEL-BH124_1.5m, NEL-BH110_0.5m, NEL-BH110_1.5m	13-Mar-2018	14-Mar-2018	27-Mar-2018	✔	15-Mar-2018	23-Apr-2018	✔
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH124_0.1m, NEL-BH124_1.1m, NEL-BH110_0.1m, NEL-BH110_1.0m, NEL-BH124_0.5m, NEL-BH124_1.5m, NEL-BH110_0.5m, NEL-BH110_1.5m	13-Mar-2018	14-Mar-2018	27-Mar-2018	✔	15-Mar-2018	23-Apr-2018	✔
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH124_0.1m, NEL-BH124_1.1m, NEL-BH110_0.1m, NEL-BH110_1.0m, NEL-BH124_0.5m, NEL-BH124_1.5m, NEL-BH110_0.5m, NEL-BH110_1.5m	13-Mar-2018	14-Mar-2018	20-Mar-2018	✔	15-Mar-2018	20-Mar-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH124_0.1m, NEL-BH124_1.1m, NEL-BH110_0.1m, NEL-BH110_1.0m, NEL-BH124_0.5m, NEL-BH124_1.5m, NEL-BH110_0.5m, NEL-BH110_1.5m	13-Mar-2018	14-Mar-2018	20-Mar-2018	✔	15-Mar-2018	20-Mar-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)		13-Mar-2018	----	----	----	15-Mar-2018	13-Mar-2018	✘
FB103,	RB103							
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)		13-Mar-2018	----	----	----	15-Mar-2018	09-Sep-2018	✔
FB103,	RB103							



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)								
FB103,	RB103	13-Mar-2018	----	----	----	15-Mar-2018	27-Mar-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)								
FB103,	RB103	13-Mar-2018	----	----	----	15-Mar-2018	10-Apr-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)								
FB103,	RB103	13-Mar-2018	----	----	----	14-Mar-2018	27-Mar-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)								
FB103,	RB103	13-Mar-2018	----	----	----	15-Mar-2018	10-Apr-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)								
FB103,	RB103	13-Mar-2018	14-Mar-2018	20-Mar-2018	✓	15-Mar-2018	23-Apr-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB103,	RB103	13-Mar-2018	15-Mar-2018	27-Mar-2018	✓	15-Mar-2018	27-Mar-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB103,	RB103	13-Mar-2018	15-Mar-2018	27-Mar-2018	✓	15-Mar-2018	27-Mar-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB103,	RB103	13-Mar-2018	15-Mar-2018	27-Mar-2018	✓	15-Mar-2018	27-Mar-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB103,	RB103	13-Mar-2018	15-Mar-2018	27-Mar-2018	✓	15-Mar-2018	27-Mar-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
FB103,	RB103	13-Mar-2018	14-Mar-2018	20-Mar-2018	✓	15-Mar-2018	23-Apr-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)								
FB103,	RB103	13-Mar-2018	14-Mar-2018	20-Mar-2018	✓	15-Mar-2018	23-Apr-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)								
FB103,	RB103	13-Mar-2018	14-Mar-2018	20-Mar-2018	✓	15-Mar-2018	23-Apr-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM)								
FB103,	RB103	13-Mar-2018	14-Mar-2018	20-Mar-2018	✓	15-Mar-2018	23-Apr-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
FB103,	RB103	13-Mar-2018	14-Mar-2018	20-Mar-2018	✓	15-Mar-2018	23-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
TB103,	FB103,	13-Mar-2018	15-Mar-2018	27-Mar-2018	✓	15-Mar-2018	27-Mar-2018	✓
RB103								
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
FB103,	RB103	13-Mar-2018	14-Mar-2018	20-Mar-2018	✓	15-Mar-2018	23-Apr-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
TB103,	FB103,	13-Mar-2018	15-Mar-2018	27-Mar-2018	✓	15-Mar-2018	27-Mar-2018	✓
RB103								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
TB103,	FB103,	13-Mar-2018	15-Mar-2018	27-Mar-2018	✓	15-Mar-2018	27-Mar-2018	✓
RB103								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	3	21	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	21	4.76	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1805002**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **SCOTT HILLIARD**
Site : **North East Link**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **15**
No. of samples analysed : **9**

Page : 1 of 19
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 21-Mar-2018 14:15
Date Analysis Commenced : 22-Mar-2018
Issue Date : 28-Mar-2018 16:52



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075-EM: Matrix spike recovery not determined for sample EM1804952-003 due to the presence of high level contaminants.
- EP071: Higher than expected LCS recovery, however deemed acceptable as all target analytes are <LOR.
- pH analysis is done under non-stirring condition.
- EK040P: EP1804956 #3 Poor matrix spike precision for Fluoride by PC titrator. Insufficient sample volume provided to confirm results.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH131_0.1m	NEL-BH131_0.5m	NEL-BH132_0.1m	NEL-BH132_1.0m	NEL-BH133_0.1m
Client sampling date / time					20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00
Compound	CAS Number	LOR	Unit		EM1805002-001	EM1805002-002	EM1805002-005	EM1805002-007	EM1805002-009
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		4.8	5.5	4.5	4.6	4.7
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		14.1	21.7	18.7	22.9	12.8
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	6	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		13	15	16	9	12
Lead	7439-92-1	5	mg/kg		14	15	19	11	17
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		14	28	27	15	17
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		36	44	65	33	43
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	1	<1	1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		260	400	370	340	370
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH131_0.1m	NEL-BH131_0.5m	NEL-BH132_0.1m	NEL-BH132_1.0m	NEL-BH133_0.1m
Client sampling date / time					20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00
Compound	CAS Number	LOR	Unit		EM1805002-001	EM1805002-002	EM1805002-005	EM1805002-007	EM1805002-009
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH131_0.1m	NEL-BH131_0.5m	NEL-BH132_0.1m	NEL-BH132_1.0m	NEL-BH133_0.1m
Client sampling date / time				20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	
Compound	CAS Number	LOR	Unit	EM1805002-001	EM1805002-002	EM1805002-005	EM1805002-007	EM1805002-009	
				Result	Result	Result	Result	Result	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH131_0.1m	NEL-BH131_0.5m	NEL-BH132_0.1m	NEL-BH132_1.0m	NEL-BH133_0.1m
Client sampling date / time				20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00
Compound	CAS Number	LOR	Unit	EM1805002-001	EM1805002-002	EM1805002-005	EM1805002-007	EM1805002-009
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH131_0.1m	NEL-BH131_0.5m	NEL-BH132_0.1m	NEL-BH132_1.0m	NEL-BH133_0.1m
Client sampling date / time					20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00
Compound	CAS Number	LOR	Unit		EM1805002-001	EM1805002-002	EM1805002-005	EM1805002-007	EM1805002-009
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		91.6	82.6	84.9	83.5	90.3
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		76.1	81.6	80.6	86.6	80.6
Toluene-D8	2037-26-5	0.1	%		80.4	86.1	78.0	83.4	87.1
4-Bromofluorobenzene	460-00-4	0.1	%		79.2	93.3	73.6	79.3	88.8
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		110	98.9	106	96.9	107
2-Chlorophenol-D4	93951-73-6	0.025	%		86.5	75.4	82.8	72.6	80.2
2,4,6-Tribromophenol	118-79-6	0.025	%		104	95.6	101	97.8	99.8
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		113	100	106	90.7	101
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		94.2	80.1	89.6	57.4	85.3
2-Fluorobiphenyl	321-60-8	0.025	%		106	93.8	99.6	87.2	97.0
Anthracene-d10	1719-06-8	0.025	%		110	99.0	103	103	104
4-Terphenyl-d14	1718-51-0	0.025	%		117	105	115	114	119



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH133_1.0m	----	----	----	----
Client sampling date / time				20-Mar-2018 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1805002-011	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	5.6	----	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	20.0	----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	9	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	10	----	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	16	----	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	25	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	320	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH133_1.0m	----	----	----	----
Client sampling date / time					20-Mar-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1805002-011	-----	-----	-----	-----
				Result	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH133_1.0m	----	----	----	----
				Client sampling date / time	20-Mar-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1805002-011	-----	-----	-----	-----
					Result	----	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH133_1.0m	----	----	----	----
Client sampling date / time				20-Mar-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1805002-011	-----	-----	-----	-----
Result				----	----	----	----	----

EP075I: Organochlorine Pesticides - Continued

alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH133_1.0m	----	----	----	----
Client sampling date / time				20-Mar-2018 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1805002-011	-----	-----	-----	-----	
Result				----	----	----	----		
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	77.6	----	----	----	----	
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	83.8	----	----	----	----	
Toluene-D8	2037-26-5	0.1	%	88.0	----	----	----	----	
4-Bromofluorobenzene	460-00-4	0.1	%	83.0	----	----	----	----	
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%	105	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	0.025	%	79.4	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	0.025	%	93.5	----	----	----	----	
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%	98.9	----	----	----	----	
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	78.2	----	----	----	----	
2-Fluorobiphenyl	321-60-8	0.025	%	96.9	----	----	----	----	
Anthracene-d10	1719-06-8	0.025	%	97.9	----	----	----	----	
4-Terphenyl-d14	1718-51-0	0.025	%	112	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB104	RB104	TB104	----	----
Client sampling date / time					20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1805002-013	EM1805002-014	EM1805002-015	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		6.50	6.43	----	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG050T: Total Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L		<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB104	RB104	TB104	----	----
Client sampling date / time					20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1805002-013	EM1805002-014	EM1805002-015	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB104	RB104	TB104	----	----
Client sampling date / time				20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1805002-013	EM1805002-014	EM1805002-015	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB104	RB104	TB104	----	----
Client sampling date / time					20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1805002-013	EM1805002-014	EM1805002-015	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		91.3	83.0	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		108	105	----	----	----
Toluene-D8	2037-26-5	5	%		108	106	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		95.5	108	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		32.6	28.9	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		75.9	65.4	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		82.5	68.3	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		90.3	77.6	----	----	----
Anthracene-d10	1719-06-8	1.0	%		95.7	86.6	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		110	99.5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB104	RB104	TB104	----	----
Client sampling date / time					20-Mar-2018 00:00	20-Mar-2018 00:00	20-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1805002-013	EM1805002-014	EM1805002-015	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		39.4	35.9	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		97.9	97.9	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		75.5	89.2	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		106	104	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		108	109	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		107	108	----	----	----
Anthracene-d10	1719-06-8	0.25	%		109	103	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		129	122	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		103	101	102	----	----
Toluene-D8	2037-26-5	2	%		95.2	93.4	94.8	----	----
4-Bromofluorobenzene	460-00-4	2	%		101	110	109	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Work Order Reference

EM1805002

Page 1 of 1

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		Address: 2 - 4 Westall Rd, Springvale		Lab Contact: Shirley LeComu		Container		Analyses Required	
Project North East Link - Contamination		Contact Email David.Quinn@ghd.com		Quote No./GHD Reference ME/124/18		Sample Matrix Soils: B1, B2, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12, B13, B14, B15, B16, B17, B18, B19, B20, B21, B22, B23, B24, B25, B26, B27, B28, B29, B30, B31, B32, B33, B34, B35, B36, B37, B38, B39, B40, B41, B42, B43, B44, B45, B46, B47, B48, B49, B50, B51, B52, B53, B54, B55, B56, B57, B58, B59, B60, B61, B62, B63, B64, B65, B66, B67, B68, B69, B70, B71, B72, B73, B74, B75, B76, B77, B78, B79, B80, B81, B82, B83, B84, B85, B86, B87, B88, B89, B90, B91, B92, B93, B94, B95, B96, B97, B98, B99, B100, B101, B102, B103, B104, B105, B106, B107, B108, B109, B110, B111, B112, B113, B114, B115, B116, B117, B118, B119, B120, B121, B122, B123, B124, B125, B126, B127, B128, B129, B130, B131, B132, B133, B134, B135, B136, B137, B138, B139, B140, B141, B142, B143, B144, B145, B146, B147, B148, B149, B150, B151, B152, B153, B154, B155, B156, B157, B158, B159, B160, B161, B162, B163, B164, B165, B166, B167, B168, B169, B170, B171, B172, B173, B174, B175, B176, B177, B178, B179, B180, B181, B182, B183, B184, B185, B186, B187, B188, B189, B190, B191, B192, B193, B194, B195, B196, B197, B198, B199, B200, B201, B202, B203, B204, B205, B206, B207, B208, B209, B210, B211, B212, B213, B214, B215, B216, B217, B218, B219, B220, B221, B222, B223, B224, B225, B226, B227, B228, B229, B230, B231, B232, B233, B234, B235, B236, B237, B238, B239, B240, B241, B242, B243, B244, B245, B246, B247, B248, B249, B250, B251, B252, B253, B254, B255, B256, B257, B258, B259, B260, B261, B262, B263, B264, B265, B266, B267, B268, B269, B270, B271, B272, B273, B274, B275, B276, B277, B278, B279, B280, B281, B282, B283, B284, B285, B286, B287, B288, B289, B290, B291, B292, B293, B294, B295, B296, B297, B298, B299, B300, B301, B302, B303, B304, B305, B306, B307, B308, B309, B310, B311, B312, B313, B314, B315, B316, B317, B318, B319, B320, B321, B322, B323, B324, B325, B326, B327, B328, B329, B330, B331, B332, B333, B334, B335, B336, B337, B338, B339, B340, B341, B342, B343, B344, B345, B346, B347, B348, B349, B350, B351, B352, B353, B354, B355, B356, B357, B358, B359, B360, B361, B362, B363, B364, B365, B366, B367, B368, B369, B370, B371, B372, B373, B374, B375, B376, B377, B378, B379, B380, B381, B382, B383, B384, B385, B386, B387, B388, B389, B390, B391, B392, B393, B394, B395, B396, B397, B398, B399, B400, B401, B402, B403, B404, B405, B406, B407, B408, B409, B410, B411, B412, B413, B414, B415, B416, B417, B418, B419, B420, B421, B422, B423, B424, B425, B426, B427, B428, B429, B430, B431, B432, B433, B434, B435, B436, B437, B438, B439, B440, B441, B442, B443, B444, B445, B446, B447, B448, B449, B450, B451, B452, B453, B454, B455, B456, B457, B458, B459, B460, B461, B462, B463, B464, B465, B466, B467, B468, B469, B470, B471, B472, B473, B474, B475, B476, B477, B478, B479, B480, B481, B482, B483, B484, B485, B486, B487, B488, B489, B490, B491, B492, B493, B494, B495, B496, B497, B498, B499, B500, B501, B502, B503, B504, B505, B506, B507, B508, B509, B510, B511, B512, B513, B514, B515, B516, B517, B518, B519, B520, B521, B522, B523, B524, B525, B526, B527, B528, B529, B530, B531, B532, B533, B534, B535, B536, B537, B538, B539, B540, B541, B542, B543, B544, B545, B546, B547, B548, B549, B550, B551, B552, B553, B554, B555, B556, B557, B558, B559, B560, B561, B562, B563, B564, B565, B566, B567, B568, B569, B570, B571, B572, B573, B574, B575, B576, B577, B578, B579, B580, B581, B582, B583, B584, B585, B586, B587, B588, B589, B590, B591, B592, B593, B594, B595, B596, B597, B598, B599, B600, B601, B602, B603, B604, B605, B606, B607, B608, B609, B610, B611, B612, B613, B614, B615, B616, B617, B618, B619, B620, B621, B622, B623, B624, B625, B626, B627, B628, B629, B630, B631, B632, B633, B634, B635, B636, B637, B638, B639, B640, B641, B642, B643, B644, B645, B646, B647, B648, B649, B650, B651, B652, B653, B654, B655, B656, B657, B658, B659, B660, B661, B662, B663, B664, B665, B666, B667, B668, B669, B670, B671, B672, B673, B674, B675, B676, B677, B678, B679, B680, B681, B682, B683, B684, B685, B686, B687, B688, B689, B690, B691, B692, B693, B694, B695, B696, B697, B698, B699, B700, B701, B702, B703, B704, B705, B706, B707, B708, B709, B710, B711, B712, B713, B714, B715, B716, B717, B718, B719, B720, B721, B722, B723, B724, B725, B726, B727, B728, B729, B730, B731, B732, B733, B734, B735, B736, B737, B738, B739, B740, B741, B742, B743, B744, B745, B746, B747, B748, B749, B750, B751, B752, B753, B754, B755, B756, B757, B758, B759, B760, B761, B762, B763, B764, B765, B766, B767, B768, B769, B770, B771, B772, B773, B774, B775, B776, B777, B778, B779, B780, B781, B782, B783, B784, B785, B786, B787, B788, B789, B790, B791, B792, B793, B794, B795, B796, B797, B798, B799, B800, B801							

Shirley LeCornu

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Thursday, 22 March 2018 9:48 AM
To: Shirley LeCornu
Cc: David Quinn; Menon, Venesa; Davidson, Mark (Melbourne)
Subject: RE: NEL samples

Hi Shirley,

Please analyse:

1. NEL-BH131_0.1m = IWRG621
2. NEL-BH131_0.5m = IWRG621
3. NEL-BH132_0.1m = IWRG621
4. NEL-BH132_1.0m = IWRG621
5. NEL-BH133_0.1m = IWRG621
6. NEL-BH133_1.0m = IWRG621
7. RB104 = IWRG621 water equivalent
8. TB104 = Volatile TPH/BTEX
9. FB104 = IWRG621 water equivalent

At standard TAT. Thanks.

Nazuha Rosli
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-----Original Message-----

From: Shirley LeCornu [mailto:shirley.lecornu@alsglobal.com]
Sent: Wednesday, 21 March 2018 3:30 PM
To: Rosli, Nazuha
Cc: David Quinn
Subject: NEL samples

Hi Nazuha

Can you please confirm analysis required for the attached COC.

Thanks

Shirley

Shirley LeCornu
Client Services Officer - Springvale
Environmental

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Shirley.lecornu@alsglobal.com
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We are keen for your feedback! Please click [here](#) for your 1 question survey EnviroMailT 114 - Asbestos Fibre Identification by SEM/EDS EnviroMailT 113 - Amoeba Confirmation PCR EnviroMailT 112 - Algal Capabilities EnviroMailT 111 - Analysis of VOCs by Thermal Desorption Analysis EnviroMailT 110 - Identifying Hidden PFAS Chemicals in Environmental Samples and Firefighting Foams EnviroMailTM 00 - Summary of all EnviroMailsTM by Category
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-----Original Message-----

From: APSPRLP015 [mailto:APSPRLP015@ALSGLOBAL.COM]
Sent: Wednesday, 21 March 2018 3:27 PM
To: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Subject: Scanned Documents

Number of Images: 1
Attachment File Type: PDF

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1805002**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 4
Order number	: ----	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link		
Sampler	: SCOTT HILLIARD		

Dates

Date Samples Received	: 21-Mar-2018 14:15	Issue Date	: 22-Mar-2018
Client Requested Due Date	: 28-Mar-2018	Scheduled Reporting Date	: 28-Mar-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 9.5°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 15 / 9

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1805002-001	20-Mar-2018 00:00	NEL-BH131_0.1m		✓	✓
EM1805002-002	20-Mar-2018 00:00	NEL-BH131_0.5m		✓	✓
EM1805002-003	20-Mar-2018 00:00	NEL-BH131_1.0m	✓		
EM1805002-004	20-Mar-2018 00:00	NEL-BH131_1.5m	✓		
EM1805002-005	20-Mar-2018 00:00	NEL-BH132_0.1m		✓	✓
EM1805002-006	20-Mar-2018 00:00	NEL-BH132_0.5m	✓		
EM1805002-007	20-Mar-2018 00:00	NEL-BH132_1.0m		✓	✓
EM1805002-008	20-Mar-2018 00:00	NEL-BH132_1.5m	✓		
EM1805002-009	20-Mar-2018 00:00	NEL-BH133_0.1m		✓	✓
EM1805002-010	20-Mar-2018 00:00	NEL-BH133_0.5m	✓		
EM1805002-011	20-Mar-2018 00:00	NEL-BH133_1.0m		✓	✓
EM1805002-012	20-Mar-2018 00:00	NEL-BH133_1.5m	✓		

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PCT)	WATER - EG050T Total Hexavalent Chromium	WATER - EK040-P Fluoride (PCT)	WATER - W-07 TRH/BTEXN/PAH
EM1805002-013	20-Mar-2018 00:00	FB104	✓	✓	✓	✓
EM1805002-014	20-Mar-2018 00:00	RB104	✓	✓	✓	✓



Matrix: **WATER**

Laboratory sample ID Client sampling date / time Client sample ID

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EK026SF Total Cyanide by Segmented Flow Analyser	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP074 (water) minus BTEXN Volatile Organic Compounds (minus BTEXN)	WATER - EP075-EM SVOC - Waste Classification	WATER - IWRG621 Metals (Total) IWRG621 Total Metals in Water (inc. total Cr)	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1805002-013	20-Mar-2018 00:00	FB104	✓	✓	✓	✓	✓	
EM1805002-014	20-Mar-2018 00:00	RB104	✓	✓	✓	✓	✓	
EM1805002-015	20-Mar-2018 00:00	TB104						✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator							
FB104	Clear Plastic Bottle - Natural	----	20-Mar-2018	21-Mar-2018	✗	----	----
RB104	Clear Plastic Bottle - Natural	----	20-Mar-2018	21-Mar-2018	✗	----	----

QUALITY CONTROL REPORT

Work Order	: EM1805002	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 21-Mar-2018
Order number	: ----	Date Analysis Commenced	: 22-Mar-2018
C-O-C number	: ----	Issue Date	: 28-Mar-2018
Sampler	: SCOTT HILLIARD		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 15		
No. of samples analysed	: 9		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1519320)									
EM1804974-018	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.8	8.8	0.00	0% - 20%
EM1804979-006	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.6	7.6	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1518052)									
EM1804974-013	Anonymous	EA055: Moisture Content	----	1	%	21.3	25.5	18.1	0% - 20%
EM1804984-001	Anonymous	EA055: Moisture Content	----	1	%	12.0	12.5	4.20	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1518053)									
EM1805002-002	NEL-BH131_0.5m	EA055: Moisture Content	----	1	%	21.7	21.5	0.880	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1515702)									
EM1804928-019	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	10	16.6	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	15	29.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	29	41	34.6	No Limit
EM1804969-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	<2	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1515702) - continued									
EM1804969-001	Anonymous	EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1515703)									
EM1804928-019	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1804969-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1518775)									
EM1804974-015	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1804991-025	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1523124)									
EM1804569-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1804991-093	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1517966)									
EM1804950-038	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	130	130	0.00	No Limit
EM1804991-093	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	90	80	13.3	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1517954)									
EM1804952-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1805002-002	NEL-BH131_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1515630)									
EM1804952-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1805002-002	NEL-BH131_0.5m	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1515630)									
EM1804952-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1805002-002	NEL-BH131_0.5m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1515630)									
EM1804952-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1515630) - continued									
EM1804952-001	Anonymous	EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1805002-002	NEL-BH131_0.5m	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit		
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1517952)									
EM1804952-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1517952) - continued									
EM1804952-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	0.9	<0.5	61.0	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	5.7	# 2.0	98.0	0% - 50%
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	1.7	0.6	100.0	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	32.2	# 8.2	119	0% - 20%
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	9.4	# 2.7	110	0% - 50%
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	40.7	# 12.6	106	0% - 20%
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	42.8	# 13.5	104	0% - 20%
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	20.2	# 7.0	97.3	0% - 20%
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	17.8	# 6.2	96.3	0% - 20%
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	25.0	# 10.1	84.9	0% - 20%
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	16.6	# 6.6	85.5	0% - 20%
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	6.1	# 2.7	76.6	0% - 50%
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	1.8	0.8	80.2	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	6.7	# 3.0	75.5	0% - 50%
EM1805002-002	NEL-BH131_0.5m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1517952)									
EM1804952-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1517952) - continued									
EM1804952-001	Anonymous	EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1805002-002	NEL-BH131_0.5m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1515630)									
EM1804952-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1805002-002	NEL-BH131_0.5m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1517953)									
EM1804952-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	370	180	71.1	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	290	190	42.1	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1517953) - continued									
EM1805002-002	NEL-BH131_0.5m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1515630)									
EM1804952-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1805002-002	NEL-BH131_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1517953)									
EM1804952-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	580	320	58.2	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	200	140	30.7	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1805002-002	NEL-BH131_0.5m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1517504)									
EM1805010-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.31	6.31	0.00	0% - 20%
EM1804947-012	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.16	8.20	0.428	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 1515048)									
EM1804949-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0002	<0.0002	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.007	0.008	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.034	0.036	4.56	0% - 50%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.010	0.010	0.00	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.007	0.007	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.093	0.098	5.71	0% - 20%
		EG020A-T: Tin	7440-31-5	0.001	mg/L	<0.002	<0.002	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.030	0.034	9.75	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.02	<0.02	0.00	No Limit
EM1805002-013	FB104	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1515049)									
EM1805002-013	FB104	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1518314)									
EM1804985-009	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1805065-008	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050T: Total Hexavalent Chromium (QC Lot: 1523708)									
EM1804835-001	Anonymous	EG050T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1805002-013	FB104	EG050T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1518809)									
EM1805031-004	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1805090-008	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1517505)									
EM1805002-014	RB104	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1804956-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.5	0.5	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1517586)									
EM1804974-024	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1517586)									
EM1804974-024	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1517586)									
EM1804974-024	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1517586)									
EM1804974-024	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	6	7	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1517585)									

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 Work Order : EM1805002
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1517585) - continued									
EM1804989-101	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1804974-024	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1517585)									
EM1804989-101	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1804974-024	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1517585)									
EM1804989-101	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1804974-024	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1515702)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.5	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.9	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	97.0	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	92.1	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	102	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	96.3	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	102	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	92.8	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	105	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	99.5	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1515703)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	83.7	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1518775)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	78.0	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1523124)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	88.4	80	110
EK040T: Fluoride Total (QCLot: 1517966)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	94.0	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1517954)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	92.2	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1515630)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	98.2	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	97.0	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	94.6	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	91.3	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	91.0	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	87.6	74	114
EP074H: Naphthalene (QCLot: 1515630)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	101	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1515630)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	83.8	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	97.9	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1515630) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	102	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	96.8	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	99.6	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	99.5	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	104	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	105	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	101	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	96.4	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	104	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	94.0	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	106	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	95.4	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	90.5	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	96.6	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.3	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	93.7	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	91.2	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1517952)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	108	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	99.9	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	101	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	92.4	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	102	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	90.4	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	97.0	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	108	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	87.8	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1517952)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	97.4	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	98.1	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	103	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	98.9	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	99.8	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	# 132	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	87.9	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	87.0	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	99.7	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	132	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1517952)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	102	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	106	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	109	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	107	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	107	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	70.5	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	108	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	109	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	108	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	112	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	116	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	113	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	111	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	109	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	113	55	137
EP075I: Organochlorine Pesticides (QCLot: 1517952)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	107	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	100	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	108	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	107	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	107	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	105	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	105	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	105	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	105	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	104	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	109	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	113	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	110	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	150	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	64.7	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	111	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	107	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	110	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	115	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	118	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1515630)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	104	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1515048)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	90	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.9	86	111
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.2	87	108
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.4	88	109
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	102	88	114
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	101	87	111
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.6	85	113
EG020A-T: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	105	88	113
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100	87	113
EG020T: Total Metals by ICP-MS (QCLot: 1515049)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	103	78	129
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1518314)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	101	81	114
EG050T: Total Hexavalent Chromium (QCLot: 1523708)								
EG050T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1518809)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	89.4	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1517505)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	96.8	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1515232)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	94.2	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1517586)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1517586) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	97.1	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1517586)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	98.8	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	97.0	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	109	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	91.3	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	101	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	95.2	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	93.2	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	103	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	87.9	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	102	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	90.9	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	95.0	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	112	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	# 60.4	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1517586)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	96.2	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	81.4	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	84.8	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	# 60.8	62	119
EP074G: Trihalomethanes (QCLot: 1517586)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	102	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1515233)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	81.2	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	83.4	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	85.0	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	86.8	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	89.7	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	3.5 µg/L	61.1	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	93.7	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	93.3	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	88.7	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	94.5	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	93.1	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	94.7	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	89.0	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1515233) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	92.8	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	92.5	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	94.2	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1515235)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	89.1	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	83.5	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	99.8	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	86.5	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	98.0	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	87.7	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	99.7	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	100	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	85.2	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1515235)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	37.6	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	79.4	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	68.9	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	85.2	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	103	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	97.5	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	40.9	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	98.1	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	119	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	109	32	135
EP075I: Organochlorine Pesticides (QCLot: 1515235)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	102	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	103	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	98.0	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	103	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	104	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	105	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	102	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	101	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	99.5	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1515231)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	# 142	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	127	60	133



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1518775) - continued							
EM1804974-016	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	96.5	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1523124)							
EM1804952-001	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	89.4	77	113
EK040T: Fluoride Total (QCLot: 1517966)							
EM1804952-001	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	88.2	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1517954)							
EM1804952-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	101	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1515630)							
EM1804952-002	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	86.6	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	93.5	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1515630)							
EM1804952-002	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	91.5	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	79.5	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	86.3	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1517952)							
EM1804952-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	102	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	92.9	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	54.2	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1517952)							
EM1804952-003	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	94.8	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	72.1	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1517952)							
EM1804952-003	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	116	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	# Not Determined	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1515630)							
EM1804952-002	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	93.5	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1517953)							
EM1804952-004	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	84.8	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	90.5	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	88.0	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1515630)							
EM1804952-002	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	92.7	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1517953)							
EM1804952-004	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	88.4	65	123



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1517953) - continued							
EM1804952-004	Anonymous	EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	90.8	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	77.2	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1515048)							
EM1804949-001	Anonymous	EG020A-T: Arsenic	7440-38-2	2 mg/L	108	82	118
		EG020A-T: Cadmium	7440-43-9	0.5 mg/L	87.6	75	129
		EG020A-T: Copper	7440-50-8	2 mg/L	88.1	81	115
		EG020A-T: Lead	7439-92-1	2 mg/L	84.1	83	121
		EG020A-T: Nickel	7440-02-0	2 mg/L	99.2	80	118
		EG020A-T: Zinc	7440-66-6	2 mg/L	91.6	74	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1518314)							
EM1805002-013	FB104	EG035T: Mercury	7439-97-6	0.01 mg/L	102	70	130
EG050T: Total Hexavalent Chromium (QCLot: 1523708)							
EM1804835-002	Anonymous	EG050T: Hexavalent Chromium	18540-29-9	0.5 mg/L	106	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1518809)							
EM1804978-002	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	89.8	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1517505)							
EM1804956-003	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	# 52.5	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1517586)							
EM1804974-026	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	84.7	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	75.0	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1517586)							
EM1804974-026	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	88.5	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1517585)							
EM1804974-026	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	70.6	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1517585)							
EM1804974-026	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	70.0	44	122
EP080: BTEXN (QCLot: 1517585)							
EM1804974-026	Anonymous	EP080: Benzene	71-43-2	20 µg/L	86.1	68	130
		EP080: Toluene	108-88-3	20 µg/L	87.4	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1805002	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 21-Mar-2018
Site	: North East Link	Issue Date	: 28-Mar-2018
Sampler	: SCOTT HILLIARD	No. of samples received	: 15
Order number	: ----	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- Duplicate outliers exist - please see following pages for full details.
- Laboratory Control outliers exist - please see following pages for full details.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP075B: Polynuclear Aromatic Hydrocarbons	EM1804952--001	Anonymous	Acenaphthylene	208-96-8	98.0 %	0% - 50%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1804952--001	Anonymous	Phenanthrene	85-01-8	119 %	0% - 20%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1804952--001	Anonymous	Anthracene	120-12-7	110 %	0% - 50%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1804952--001	Anonymous	Fluoranthene	206-44-0	106 %	0% - 20%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1804952--001	Anonymous	Pyrene	129-00-0	104 %	0% - 20%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1804952--001	Anonymous	Benz(a)anthracene	56-55-3	97.3 %	0% - 20%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1804952--001	Anonymous	Chrysene	218-01-9	96.3 %	0% - 20%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1804952--001	Anonymous	Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	84.9 %	0% - 20%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1804952--001	Anonymous	Benzo(a)pyrene	50-32-8	85.5 %	0% - 20%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1804952--001	Anonymous	Indeno(1.2.3.cd)pyrene	193-39-5	76.6 %	0% - 50%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1804952--001	Anonymous	Benzo(g,h,i)perylene	191-24-2	75.5 %	0% - 50%	RPD exceeds LOR based limits
Laboratory Control Spike (LCS) Recoveries							
EP075A: Phenolic Compounds (Non-halogenated)	QC-1517952-001	----	2,4-Dinitrophenol	51-28-5	132 %	23-125%	Recovery greater than upper control limit

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP074E: Halogenated Aliphatic Compounds	QC-1517586-001	----	Hexachlorobutadiene	87-68-3	60.4 %	63-126%	Recovery less than lower control limit
EP074F: Halogenated Aromatic Compounds	QC-1517586-001	----	1,2,4-Trichlorobenzene	120-82-1	60.8 %	62-119%	Recovery less than lower control limit
EP080/071: Total Petroleum Hydrocarbons	QC-1515231-001	----	C10 - C14 Fraction	----	142 %	58-134%	Recovery greater than upper control limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	QC-1515231-001	----	>C10 - C16 Fraction	----	131 %	58-122%	Recovery greater than upper control limit
Matrix Spike (MS) Recoveries							
EK040P: Fluoride by PC Titrator	EM1804956--003	Anonymous	Fluoride	16984-48-8	52.5 %	70-130%	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural FB104,	RB104	----	----	----	23-Mar-2018	20-Mar-2018	3

Outliers : Frequency of Quality Control Samples



Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	11	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	11	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH131_0.1m, NEL-BH132_0.1m, NEL-BH133_0.1m,	NEL-BH131_0.5m, NEL-BH132_1.0m, NEL-BH133_1.0m	20-Mar-2018	26-Mar-2018	27-Mar-2018	✓	26-Mar-2018	26-Mar-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH131_0.1m, NEL-BH132_0.1m, NEL-BH133_0.1m,	NEL-BH131_0.5m, NEL-BH132_1.0m, NEL-BH133_1.0m	20-Mar-2018	----	----	----	23-Mar-2018	03-Apr-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH131_0.1m, NEL-BH132_0.1m, NEL-BH133_0.1m,	NEL-BH131_0.5m, NEL-BH132_1.0m, NEL-BH133_1.0m	20-Mar-2018	26-Mar-2018	16-Sep-2018	✓	27-Mar-2018	16-Sep-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH131_0.1m, NEL-BH132_0.1m, NEL-BH133_0.1m,	NEL-BH131_0.5m, NEL-BH132_1.0m, NEL-BH133_1.0m	20-Mar-2018	26-Mar-2018	17-Apr-2018	✓	28-Mar-2018	17-Apr-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)		20-Mar-2018	23-Mar-2018	17-Apr-2018	✓	24-Mar-2018	30-Mar-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)		20-Mar-2018	26-Mar-2018	03-Apr-2018	✓	27-Mar-2018	09-Apr-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)		20-Mar-2018	23-Mar-2018	17-Apr-2018	✓	26-Mar-2018	17-Apr-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)		20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	02-May-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)		20-Mar-2018	23-Mar-2018	27-Mar-2018	✓	23-Mar-2018	27-Mar-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)		20-Mar-2018	23-Mar-2018	27-Mar-2018	✓	23-Mar-2018	27-Mar-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)		20-Mar-2018	23-Mar-2018	27-Mar-2018	✓	23-Mar-2018	27-Mar-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)		20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	02-May-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)		20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	02-May-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)		20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	02-May-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)		20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	02-May-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)		20-Mar-2018	23-Mar-2018	27-Mar-2018	✓	23-Mar-2018	27-Mar-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)		20-Mar-2018	23-Mar-2018	27-Mar-2018	✓	23-Mar-2018	27-Mar-2018	✓
NEL-BH131_0.1m,	NEL-BH131_0.5m,							
NEL-BH132_0.1m,	NEL-BH132_1.0m,							
NEL-BH133_0.1m,	NEL-BH133_1.0m							

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
FB104,	RB104	20-Mar-2018	----	----	----	23-Mar-2018	20-Mar-2018	✗
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-T)								
FB104,	RB104	20-Mar-2018	22-Mar-2018	16-Sep-2018	✓	23-Mar-2018	16-Sep-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T)								
FB104,	RB104	20-Mar-2018	----	----	----	26-Mar-2018	17-Apr-2018	✓
EG050T: Total Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050T)								
FB104,	RB104	20-Mar-2018	----	----	----	26-Mar-2018	17-Apr-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) FB104,	RB104	20-Mar-2018	----	----	----	23-Mar-2018	03-Apr-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) FB104,	RB104	20-Mar-2018	----	----	----	23-Mar-2018	17-Apr-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) FB104,	RB104	20-Mar-2018	22-Mar-2018	27-Mar-2018	✓	26-Mar-2018	01-May-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) FB104,	RB104	20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	03-Apr-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB104,	RB104	20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	03-Apr-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB104,	RB104	20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	03-Apr-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) FB104,	RB104	20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	03-Apr-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB104,	RB104	20-Mar-2018	22-Mar-2018	27-Mar-2018	✓	26-Mar-2018	01-May-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB104,	RB104	20-Mar-2018	23-Mar-2018	27-Mar-2018	✓	26-Mar-2018	02-May-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB104,	RB104	20-Mar-2018	23-Mar-2018	27-Mar-2018	✓	26-Mar-2018	02-May-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) FB104,	RB104	20-Mar-2018	23-Mar-2018	27-Mar-2018	✓	26-Mar-2018	02-May-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) FB104,	RB104	20-Mar-2018	22-Mar-2018	27-Mar-2018	✓	26-Mar-2018	01-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB104, TB104	RB104,	20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	03-Apr-2018	✓

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 Work Order : EM1805002
 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
FB104,	RB104	20-Mar-2018	22-Mar-2018	27-Mar-2018	✓	26-Mar-2018	01-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
FB104,	RB104,	20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	03-Apr-2018	✓
TB104								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
FB104,	RB104,	20-Mar-2018	23-Mar-2018	03-Apr-2018	✓	23-Mar-2018	03-Apr-2018	✓
TB104								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	3	25	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Total	EG050T	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	3	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	11	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Total	EG050T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Total	EG050T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Total	EG050T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	3	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	11	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Total	EG050T	WATER	In house: Referenced to APHA 3500 Cr-B. Hexavalent chromium is determined directly on water sample as received by pH adjustment and colour development using dephenylcarbazine. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1805006**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **North East Link**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **2**
No. of samples analysed : **2**

Page : 1 of 5
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 05-Mar-2018 17:30
Date Analysis Commenced : 23-Mar-2018
Issue Date : 28-Mar-2018 16:26



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- **This is a rebatch of EM1804004.**
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-BH109_0.2m	NEL-BH109_1.1m	----	----	----
Client sampling date / time				05-Mar-2018 00:00	05-Mar-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1805006-001	EM1805006-002	-----	-----	-----
				Result	Result	----	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	----	----	----	----
Nickel	7440-02-0	0.1	mg/L	<0.1	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	----	27.5	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	----	69.1	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	----	106	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	----	82.4	----	----	----
Anthracene-d10	1719-06-8	1.0	%	----	84.2	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	----	88.4	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH109_0.2m	NEL-BH109_1.1m	----	----	----
Client sampling date / time				05-Mar-2018 00:00	05-Mar-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1805006-001	EM1805006-002	-----	-----	-----
Result				Result	Result	----	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	7.3	7.5	----	----	----
After HCl pH	----	0.1	pH Unit	1.4	1.4	----	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	----	----	----
Final pH	----	0.1	pH Unit	5.0	5.0	----	----	----



Surrogate Control Limits

Sub-Matrix: ASLP LEACHATE

		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127

re-batch

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Thursday, 22 March 2018 9:18 AM
To: Shirley LeCornu
Cc: Menon, Venesa; Davidson, Mark (Melbourne); David Quinn
Subject: RE: RESULTS & EDD for ALS Workorder : EM1804004 | Overall Description: North East Link

Hi Shirley,

MS: 826

New Lab 10

New tray

MS: 1116

Can you please do leachability test for:

- 1 - NEL-BH109_0.2m: lead, nickel
3 - NEL-BH109_1.1: Benzo(a)pyrene

4

TC
22.3

At standard TAT. Thanks.

Nazuha Rosli
Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
nazuha.rosli@aecom.com

AECOM
Collins Square, Level 10, Tower Two, 727 Collins Street, Melbourne, VIC 3008
T +61 3 9653 1234 F +61 3 9654 7117
aecom.com

Environmental Division
Melbourne
Work Order Reference
EM1805006



Telephone : +61-3-8548 9600

Imagine it. Delivered.

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From: David Quinn [mailto:David.Quinn@ghd.com]
Sent: Monday, 19 March 2018 4:00 PM
To: Rosli, Nazuha
Cc: Menon, Venesa; Davidson, Mark (Melbourne)
Subject: FW: RESULTS & EDD for ALS Workorder : EM1804004 | Overall Description: North East Link

From: angel-no-reply@alsglobal.com [mailto:angel-no-reply@alsglobal.com]
Sent: Thursday, 8 March 2018 1:55 PM
To: David Quinn
Subject: RESULTS & EDD for ALS Workorder : EM1804004 | Overall Description: North East Link



Environmental

Deliverables for ALS Workorder EM1804004

Project: 31350060803

Overall Description: North East Link

Dear DAVID QUINN,

Please find enclosed the following deliverables for **EM1804004**:

- EM1804004_0_COA.pdf
- EM1804004_0_ENMRG.CSV
- 31350060803.ESDAT_EM1804004_0.Chemistry2e.CSV
- 31350060803.ESDAT_EM1804004_0.Header.XML
- 31350060803.ESDAT_EM1804004_0.Sample2e.CSV
- EM1804004_0_QC.pdf
- EM1804004_0_QCI.pdf

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1805006**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060803	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link		
Sampler	:		

Dates

Date Samples Received	: 05-Mar-2018 17:30	Issue Date	: 22-Mar-2018
Client Requested Due Date	: 29-Mar-2018	Scheduled Reporting Date	: 29-Mar-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **This is a rebatch of EM1804004.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN60a ASLP Leachate Procedure	SOIL - EP075 SIM PAH only
EM1805006-001	05-Mar-2018 00:00	NEL-BH109_0.2m	✓	✓	
EM1805006-002	05-Mar-2018 00:00	NEL-BH109_1.1m		✓	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: SOIL

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
					Date	Evaluation	Date	Evaluation
EN60a: ASLP for Non & Semivolatile Analytes								
NEL-BH109_1.1m	Non-Volatile Leach: 14 day HT(€	19-Mar-2018	----	05-Mar-2018	✓	22-Mar-2018	✗	

ALL ACCOUNTS

- Email ap-fss@ghd.com

- *AU Certificate of Analysis - NATA (COA)

- [illegible]

- *AU Certificate of Analysis - NATA (COA)

- Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com

- *AU Certificate of Analysis - NATA (COA)

- [illegible]

QUALITY CONTROL REPORT

Work Order	: EM1805006	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 05-Mar-2018
Order number	: ----	Date Analysis Commenced	: 23-Mar-2018
C-O-C number	: ----	Issue Date	: 28-Mar-2018
Sampler	: ----		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 2		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1522781)									
EM1804853-001	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	0.1	0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	0.1	0.1	0.00	No Limit
EM1804912-005	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit			LCS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1522781)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	93.9	88	113
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	90.6	86	111
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1525727)								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	78.3	56	126

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1522781)							
EM1804853-002	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	89.3	86	118
		EG005C: Nickel	7440-02-0	1 mg/L	88.3	88	116

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1805006	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 05-Mar-2018
Site	: North East Link	Issue Date	: 28-Mar-2018
Sampler	: ----	No. of samples received	: 2
Order number	:	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EN60: ASLP Leaching Procedure						
Non-Volatile Leach: 14 day HT(e.g. SV organics) NEL-BH109_1.1m	26-Mar-2018	19-Mar-2018	7	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN60a) NEL-BH109_1.1m	05-Mar-2018	26-Mar-2018	19-Mar-2018	✖	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH109_0.2m	05-Mar-2018	23-Mar-2018	01-Sep-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH109_0.2m	23-Mar-2018	26-Mar-2018	19-Sep-2018	✓	26-Mar-2018	19-Sep-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) NEL-BH109 1.1m	26-Mar-2018	27-Mar-2018	02-Apr-2018	✓	28-Mar-2018	06-May-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
Separatory Funnel Extraction of Liquids	ORG14	SOIL	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CERTIFICATE OF ANALYSIS

Work Order : **EM1805014**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060803**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **North East Link**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 13-Mar-2018 16:10
Date Analysis Commenced : 23-Mar-2018
Issue Date : 26-Mar-2018 15:51



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1804502.

Page : 3 of 4
 Work Order : EM1805014
 Client : GHD PTY LTD
 Project : 31350060803



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				NEL-BH110_0.5m	----	----	----	----
				Client sampling date / time	13-Mar-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1805014-001	-----	-----	-----	-----
				Result	----	----	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH110_0.5m	----	----	----	----
				Client sampling date / time	13-Mar-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1805014-001	-----	-----	-----	-----
				Result		----	----	----	----
EN60: ASLP Leaching Procedure									
Initial pH	----	0.1	pH Unit		7.3	----	----	----	----
After HCl pH	----	0.1	pH Unit		1.4	----	----	----	----
Extraction Fluid pH	----	0.1	pH Unit		5.0	----	----	----	----
Final pH	----	0.1	pH Unit		5.0	----	----	----	----

re-batch

Shirley LeCornu

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Thursday, 22 March 2018 9:31 AM
To: Shirley LeCornu
Cc: Menon, Venesa; Davidson, Mark (Melbourne); David Quinn
Subject: RE: RESULTS & EDD for ALS Workorder : EM1804502 | Overall Description: NEL - Contamination

Hi Shirley,

MS: 967 new Lab 10

New tray: MS 1117

Can you please do leachability test for:
NEL-BH110_0.5m: Lead

(1)

At standard TAT. Thanks.

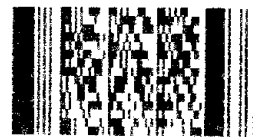
Nazuha Rosli
Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
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Environmental Division
Melbourne
Work Order Reference
EM1805014



Telephone : + 61-3-8549 9600

From: David Quinn [<mailto:David.Quinn@ghd.com>]
Sent: Monday, 19 March 2018 3:58 PM
To: Rosli, Nazuha
Cc: Menon, Venesa; Davidson, Mark (Melbourne)
Subject: FW: RESULTS & EDD for ALS Workorder : EM1804502 | Overall Description: NEL - Contamination

From: angel-no-reply@aisglobal.com [<mailto:angel-no-reply@aisglobal.com>]
Sent: Friday, 16 March 2018 6:06 PM
To: David Quinn
Subject: RESULTS & EDD for ALS Workorder : EM1804502 | Overall Description: NEL - Contamination



Deliverables for ALS Workorder EM1804502

Project: 31350060910

Overall Description: NEL - Contamination

Dear DAVID QUINN,

Please find enclosed the following deliverables for **EM1804502**:

- 31350060910.ESDAT_EM1804502_0.Chemistry2e.CSV
- 31350060910.ESDAT_EM1804502_0.Header.XML
- 31350060910.ESDAT_EM1804502_0.Sample2e.CSV
- EM1804502_0_COA.pdf
- EM1804502_0_ENMRG.CSV
- EM1804502_0_QC.pdf
- EM1804502_0_QCI.pdf
- EM1804502_0_COA_GL_EPA_WASTE.pdf

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1805014**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060803	Page	: 1 of 2
Order number	: ----	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link		
Sampler	:		

Dates

Date Samples Received	: 13-Mar-2018 16:10	Issue Date	: 22-Mar-2018
Client Requested Due Date	: 29-Mar-2018	Scheduled Reporting Date	: 29-Mar-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **This is a rebatch of EM1804502.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- ### Summary of Sample(s) and Requested Analysis

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - E Leachate	SOIL - E ASLP Leachate
EM1805014-001	13-Mar-2018 00:00	NEL-BH110_0.5m	✓	✓

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1805014	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 13-Mar-2018
Order number	: ----	Date Analysis Commenced	: 23-Mar-2018
C-O-C number	: ----	Issue Date	: 26-Mar-2018
Sampler	: ----		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1522781)									
EM1804853-001	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	0.1	0.1	0.00	No Limit
EM1804912-005	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit		Result		LCS	Low
EG005C: Leachable Metals by ICPAES (QCLot: 1522781)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	93.9	88	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1522781)							
EM1804853-002	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	89.3	86	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1805014	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060803	Date Samples Received	: 13-Mar-2018
Site	: North East Link	Issue Date	: 26-Mar-2018
Sampler	: ----	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH110 0.5m	13-Mar-2018	23-Mar-2018	09-Sep-2018	✓	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH110 0.5m	23-Mar-2018	26-Mar-2018	19-Sep-2018	✔	26-Mar-2018	19-Sep-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	7	28.57	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : EM1805015 Amendment : 1 Client : GHD PTY LTD Contact : MR DAVID QUINN Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 Telephone : ---- Project : 31350060803 Order number : ---- C-O-C number : ---- Sampler : ---- Site : ---- Quote number : ME/124/18 - North East Link No. of samples received : 1 No. of samples analysed : 1	Page : 1 of 5 Laboratory : Environmental Division Melbourne Contact : Shirley LeCornu Address : 4 Westall Rd Springvale VIC Australia 3171 Telephone : +61-3-8549 9630 Date Samples Received : 27-Feb-2018 15:50 Date Analysis Commenced : 23-Mar-2018 Issue Date : 28-Mar-2018 10:27
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- **This is a rebatch of EM1803724.**
- Amendment (28/03/2018): This report has been amended as a result of typing error on the sample identification numbers (IDs). All analysis results are as per the previous report
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				NEL-BH140_0.2m	----	----	----	----
Client sampling date / time				27-Feb-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1805015-001	-----	-----	-----	-----
Result				----	----	----	----	----
EG005C: Leachable Metals by ICPAES								
Nickel	7440-02-0	0.1	mg/L	<0.1	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	29.7	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	65.0	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	83.0	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	60.4	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%	71.2	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	86.2	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-BH140_0.2m	----	----	----	----
			Client sampling date / time	27-Feb-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1805015-001	-----	-----	-----	-----
Result				----	----	----	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	8.5	----	----	----	----
After HCl pH	----	0.1	pH Unit	1.4	----	----	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	----	----	----	----
Final pH	----	0.1	pH Unit	5.0	----	----	----	----



Surrogate Control Limits

Sub-Matrix: ASLP LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127

re-batch

Shirley LeCornu

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Thursday, 22 March 2018 9:22 AM
To: Shirley LeCornu
Cc: Davidson, Mark (Melbourne); Menon, Venesa; David Quinn
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1803724 | Your Reference: 31350060803

Hi Shirley,

Sorry...typo

It should be NEL-BH140_0.2m: Nickel, Benzo(a)pyrene

Thanks.

Nazuha Rosli
Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
nazuha.rosli@aecom.com

AECOM
Collins Square, Level 10, Tower Two, 727 Collins Street, Melbourne, VIC 3008
T +61 3 9653 1234 F +61 3 9654 7117
aecom.com

Imagine it. Delivered.

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From: Rosli, Nazuha
Sent: Thursday, 22 March 2018 9:20 AM
To: shirley.lecornu@alsglobal.com
Cc: Davidson, Mark (Melbourne); Menon, Venesa; 'David Quinn'
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1803724 | Your Reference: 31350060803

Hi Shirley,

Can you please do leachability test for:
- NEL-BH109_0.2m: Nickel, Benzo(a)pyrene

At standard TAT. Thanks.

Nazuha Rosli
Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
nazuha.rosli@aecom.com

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Collins Square, Level 10, Tower Two, 727 Collins Street, Melbourne, VIC 3008
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aecom.com

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From: David Quinn [<mailto:David.Quinn@ghd.com>]
Sent: Monday, 19 March 2018 4:03 PM
To: Rosli, Nazuha
Cc: Davidson, Mark (Melbourne); Menon, Venesa
Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1803724 | Your Reference: 31350060803

From: angel-no-reply@alsglobal.com [<mailto:angel-no-reply@alsglobal.com>]
Sent: Tuesday, 6 March 2018 4:14 PM
To: David Quinn
Subject: RESULTS & EDD & INVOICE for ALS Workorder : EM1803724 | Your Reference: 31350060803

Environmental Division
Melbourne
Work Order Reference
EM1805015



Telephone : +61-3-9549 9600

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1805015****Amendment : 1**

Client : GHD PTY LTD
Contact : MR DAVID QUINN
Address : LEVEL 8, 180 LONSDALE ST
MELBOURNE VIC, AUSTRALIA 3001

Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia
3171

E-mail : david.quinn@ghd.com
Telephone : ----
Facsimile : ----

E-mail : shirley.lecornu@Alsglobal.com
Telephone : +61-3-8549 9630
Facsimile : +61-3-8549 9626

Project : 31350060803
Order number : ----

Page : 1 of 3
Quote number : EM2018GHDSE0003 (ME/124/18 -
North East Link)
QC Level : NEPM 2013 B3 & ALS QC Standard

C-O-C number : ----
Site : ----
Sampler :

Dates

Date Samples Received : 27-Feb-2018 15:50
Client Requested Due : 29-Mar-2018
Date

Issue Date : 28-Mar-2018
Scheduled Reporting Date : 29-Mar-2018

Delivery Details

Mode of Delivery : Samples On Hand
No. of coolers/boxes : ----
Receipt Detail :

Security Seal : Not Available
Temperature : ----
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **This is a rebatch of EM1803724.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN60a ASLP Leachate Procedure	SOIL - EP075 SIM PAH only SIM - PAH only
EM1805015-001	27-Feb-2018 00:00	NEL-BH140_0.2m	✓	✓	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: SOIL

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
					Date	Evaluation	Date	Evaluation
EN60a: ASLP for Non & Semivolatile Analytes								
NEL-BH140_0.2m	Non-Volatile Leach: 14 day HT(€	13-Mar-2018	----	27-Feb-2018	✓	22-Mar-2018	✗	

ALL ACCOUNTS

- Email ap-fss@ghd.com

Email david.quinn@ghd.com

- [illegible]

Email GHDLabreports@ghd.com

- | | |
|-------|-----------------------|
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |

Email Nazuha.rosli@aecom.com

- [illegible]

QUALITY CONTROL REPORT

Work Order : **EM1805015**

Page : 1 of 3

Amendment : **1**

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **MR DAVID QUINN**

Contact : Shirley LeCornu

Address : **LEVEL 8, 180 LONSDALE ST
MELBOURNE VIC, AUSTRALIA 3001**

Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : ----

Telephone : +61-3-8549 9630

Project : 31350060803

Date Samples Received : 27-Feb-2018

Order number : ----

Date Analysis Commenced : 23-Mar-2018

C-O-C number : ----

Issue Date : 28-Mar-2018

Sampler : ----

Site : ----

Quote number : ME/124/18 - North East Link

No. of samples received : 1

No. of samples analysed : 1



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

Dilani Fernando

Senior Inorganic Chemist

Melbourne Inorganics, Springvale, VIC

Nancy Wang

2IC Organic Chemist

Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1522781)									
EM1804853-001	Anonymous	EG005C: Nickel	7440-02-0	0.1	mg/L	0.1	0.1	0.00	No Limit
EM1804912-005	Anonymous	EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1522781)								
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	90.6	86	111
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1522476)								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	86.4	56	126

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1522781)							
EM1804853-002	Anonymous	EG005C: Nickel	7440-02-0	1 mg/L	88.3	88	116

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1805015**

Page : 1 of 4

Amendment : **1**

Client : **GHD PTY LTD**
 Contact : **MR DAVID QUINN**
 Project : **31350060803**
 Site : ----
 Sampler : ----
 Order number : ----

Laboratory : Environmental Division Melbourne
 Telephone : +61-3-8549 9630
 Date Samples Received : 27-Feb-2018
 Issue Date : 28-Mar-2018
 No. of samples received : 1
 No. of samples analysed : 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank** value outliers occur.
- **NO Duplicate** outliers occur.
- **NO Laboratory Control** outliers occur.
- **NO Matrix Spike** outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EN60: ASLP Leaching Procedure						
Non-Volatile Leach: 14 day HT(e.g. SV organics)						
NEL-BH140_0.2m	23-Mar-2018	13-Mar-2018	10	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Method					
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Container / Client Sample ID(s)							
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN60a)							
NEL-BH140_0.2m	27-Feb-2018	23-Mar-2018	13-Mar-2018	✖	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Container / Client Sample ID(s)							
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)							
NEL-BH140_0.2m	23-Mar-2018	26-Mar-2018	19-Sep-2018	✔	26-Mar-2018	19-Sep-2018	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
NEL-BH140_0.2m	23-Mar-2018	26-Mar-2018	30-Mar-2018	✔	26-Mar-2018	05-May-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
Separatory Funnel Extraction of Liquids	ORG14	SOIL	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CERTIFICATE OF ANALYSIS

Work Order : **EM1805158**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **SH**
Site : **North East Link**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **12**
No. of samples analysed : **8**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 23-Mar-2018 17:20
Date Analysis Commenced : 26-Mar-2018
Issue Date : 04-Apr-2018 16:08



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH150_0.1m	NEL-BH150_1.0m	NEL-BH151_0.1m	NEL-BH151_1.0m	QC1001
Client sampling date / time					23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00
Compound	CAS Number	LOR	Unit		EM1805158-001	EM1805158-003	EM1805158-005	EM1805158-007	EM1805158-012
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		5.0	5.8	4.9	5.8	6.3
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		29.2	19.0	20.9	24.5	26.2
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		12	8	10	10	6
Lead	7439-92-1	5	mg/kg		22	7	13	12	10
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		16	14	14	13	10
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		47	35	34	23	19
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		1	<1	1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		310	260	340	320	300
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH150_0.1m	NEL-BH150_1.0m	NEL-BH151_0.1m	NEL-BH151_1.0m	QC1001
Client sampling date / time					23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00
Compound	CAS Number	LOR	Unit		EM1805158-001	EM1805158-003	EM1805158-005	EM1805158-007	EM1805158-012
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH150_0.1m	NEL-BH150_1.0m	NEL-BH151_0.1m	NEL-BH151_1.0m	QC1001
Client sampling date / time				23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00
Compound	CAS Number	LOR	Unit	EM1805158-001	EM1805158-003	EM1805158-005	EM1805158-007	EM1805158-012
				Result	Result	Result	Result	Result

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH150_0.1m	NEL-BH150_1.0m	NEL-BH151_0.1m	NEL-BH151_1.0m	QC1001
Client sampling date / time				23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00
Compound	CAS Number	LOR	Unit	EM1805158-001	EM1805158-003	EM1805158-005	EM1805158-007	EM1805158-012
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH150_0.1m	NEL-BH150_1.0m	NEL-BH151_0.1m	NEL-BH151_1.0m	QC1001
Client sampling date / time					23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00
Compound	CAS Number	LOR	Unit		EM1805158-001	EM1805158-003	EM1805158-005	EM1805158-007	EM1805158-012
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		71.5	57.1	71.3	76.8	77.4
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		91.7	95.4	76.2	75.3	92.3
Toluene-D8	2037-26-5	0.1	%		106	104	72.5	74.4	101
4-Bromofluorobenzene	460-00-4	0.1	%		101	96.7	69.5	73.0	105
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		104	90.5	102	103	105
2-Chlorophenol-D4	93951-73-6	0.025	%		77.1	67.8	78.3	82.4	85.0
2,4,6-Tribromophenol	118-79-6	0.025	%		78.3	70.6	84.4	81.3	81.3
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		95.6	83.9	95.7	99.0	100
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		92.0	84.2	94.0	95.2	96.1
2-Fluorobiphenyl	321-60-8	0.025	%		98.6	95.8	102	102	107
Anthracene-d10	1719-06-8	0.025	%		100	93.3	105	104	106
4-Terphenyl-d14	1718-51-0	0.025	%		113	102	115	112	115



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB105	FB105	RB105	----	----
Client sampling date / time				23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1805158-009	EM1805158-010	EM1805158-011	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	6.58	6.34	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	----	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L	----	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	----	<0.01	<0.01	----	----
Tin	7440-31-5	0.001	mg/L	----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	----	<0.005	<0.005	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	----	<0.01	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	----	<0.004	<0.004	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	----	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	----	<1	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	----	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	----	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	----	<5	<5	----	----
Methylene chloride	75-09-2	5	µg/L	----	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	----	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	----	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	----	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	----	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	----	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L	----	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				TB105	FB105	RB105	----	----
Client sampling date / time				23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1805158-009	EM1805158-010	EM1805158-011	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	----	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	----	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	----	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	----	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	----	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	----	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	----	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	----	<5	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	----	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	----	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	----	<2	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	----	<2	<2	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB105	FB105	RB105	----	----
Client sampling date / time				23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1805158-009	EM1805158-010	EM1805158-011	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	----	<2	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	----	<4	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	----	<2	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	----	<2	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	----	<2	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	----	<2	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	----	<2	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	----	<4	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	----	<4	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	----	<4	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	----	<4	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	----	<4	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	----	<100	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	----	<50	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	----	<50	<50	----	----
Dinoseb	88-85-7	50	µg/L	----	<50	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	----	<50	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	----	<0.5	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	----	<0.5	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	----	<0.5	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	<0.5	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	----	<0.5	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB105	FB105	RB105	----	----
Client sampling date / time					23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1805158-009	EM1805158-010	EM1805158-011	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		----	106	94.5	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		----	76.0	97.6	----	----
Toluene-D8	2037-26-5	5	%		----	81.2	95.7	----	----
4-Bromofluorobenzene	460-00-4	5	%		----	88.5	97.5	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	25.9	27.3	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	72.8	68.9	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	50.1	50.4	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	85.0	79.3	----	----
Anthracene-d10	1719-06-8	1.0	%		----	92.2	85.2	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	95.4	87.2	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB105	FB105	RB105	----	----
Client sampling date / time					23-Mar-2018 00:00	23-Mar-2018 00:00	23-Mar-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1805158-009	EM1805158-010	EM1805158-011	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		----	30.4	26.9	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		----	77.1	71.4	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		----	65.3	59.3	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		----	68.1	63.4	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		----	78.1	73.8	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		----	83.7	78.6	----	----
Anthracene-d10	1719-06-8	0.25	%		----	86.2	80.5	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		----	97.8	91.3	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		97.3	82.2	94.7	----	----
Toluene-D8	2037-26-5	2	%		98.6	79.8	98.2	----	----
4-Bromofluorobenzene	460-00-4	2	%		109	94.9	108	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Analysis received on 26/03/18 @ 11:49 --- BN

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		Address: 2 - 4 Westall Rd, Springvale		Lab Contact: Shirley LeCornu		PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format																													
Project North East Link - Contamination		Contact Email David.Quinn@ghd.com		Quote No./GHD Reference ME/124/18		Container				Analyses Required																													
GHD Contact David Quinn		Standard TAT		Sample ID		Date		Time		Composite Sample		Sample Matrix		Preservative		Type		Number		Volume (mL)		HOLD																	
NEL-BH150 - 0.1m		23/03/18		AM		✓		S		✓		J		1		✓		X																					
NEL-BH150 - 0.5m		"		AM		✓		S		✓		J		1		✓		X																					
NEL-BH150 - 1.0m		"		AM		✓		S		✓		J		1		✓		X																					
NEL-BH150 - 1.5m		"		AM		✓		S		✓		J		1		✓		X																					
NEL-BH150 - 0.1m		"		AM		✓		S		✓		J		1		✓		X																					
NEL-BH150 - 0.5m		"		AM		✓		S		✓		J		1		✓		X																					
NEL-BH150 - 1.0m		"		AM		✓		S		✓		J		1		✓		X																					
NEL-BH150 - 1.5m		"		AM		✓		S		✓		J		1		✓		X																					
TB105		23/03/18		AM		✓		W		✓		V		1		✓		X																					
FB105		23/03/18		AM		✓		W		✓		VGP		8		✓		X																					
RB105		23/03/18		AM		✓		W		✓		VGP		8		✓		X																					
QC1001		23/03/18		AM		✓		S		✓		J		1		✓		X																					
QC2001 →		23/03/18		AM		✓		S		✓		J		1		✓		X						→ Forwarded to MET as per attached email 1 - 30 26/3															

Environmental Division
Melbourne

Work Order Reference

EM1805158



Telephone: + 51-8-8549 9600

Sampled by:	Scott Hillard	Date/Time:	23/3/18 AM	Relinquished by:	Scott Hillard	Date/Time:	23/3/18 pm.
Received by:		Date/Time:		Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Mark Rosli	Date/Time:	23/3, 17:20				
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

Shirley LeCornu

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Monday, 26 March 2018 11:49 AM
To: Shirley LeCornu
Cc: David Quinn; Menon, Venesa; Davidson, Mark (Melbourne)
Subject: RE: ON HOLD-EM1805158-GHD-31/35006/0910-NORTH EAST LINK CONTAMINATION

Hi Shirley,

Please analyse:

1. NEL-BH150_0.1m = IWRG621 - ①
2. NEL-BH150_1.0m = IWRG621 - ③
3. NEL-BH151_0.1m = IWRG621 - ⑤
4. NEL-BH151_1.0m = IWRG621 - ⑦
5. QC1001 = IWRG621 - ⑫
6. QC2001 = IWRG621 (triplicate - forward to Eurofins)
7. RB105 = IWRG621 water equivalent - ⑪
8. TB105 = Volatile TPH/BTEX - ⑨
9. FB105 = IWRG621 water equivalent - ⑩

At standard TAT. Thanks.

Nazuha Rosli
Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
mailto:nazuha.rosli@aecom.com

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http://www.aecom.com

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-----Original Message-----

From: Shirley LeCornu [mailto:shirley.lecornu@alsglobal.com]
Sent: Monday, 26 March 2018 8:54 AM
To: Rosli, Nazuha
Cc: David Quinn
Subject: FW: ON HOLD-EM1805158-GHD-31/35006/0910-NORTH EAST LINK CONTAMINATION

Hi Nazuha

Please let me know the analysis required for the attached COC.

Thanks

Shirley

Shirley LeCornu
Client Services Officer - Springvale
Environmental

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F +61 3 8549 9626
Shirley.lecornu@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

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-----Original Message-----

From: Ru Jayasinghe On Behalf Of COC Melbourne
Sent: Friday, 23 March 2018 7:12 PM
To: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Subject: ON HOLD-EM1805158-GHD-31/35006/0910-NORTH EAST LINK CONTAMINATION

Hi Shirley,

Please see attached for samples received without analysis.

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1805158**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link		
Sampler	: SH		

Dates

Date Samples Received	: 23-Mar-2018 17:20	Issue Date	: 26-Mar-2018
Client Requested Due Date	: 04-Apr-2018	Scheduled Reporting Date	: 04-Apr-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 8.3°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 12 / 8

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
FB105	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB105	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
FB105	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB105	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
FB105	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB105	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1805158-001	23-Mar-2018 00:00	NEL-BH150_0.1m		✓	✓
EM1805158-002	23-Mar-2018 00:00	NEL-BH150_0.5m	✓		
EM1805158-003	23-Mar-2018 00:00	NEL-BH150_1.0m		✓	✓
EM1805158-004	23-Mar-2018 00:00	NEL-BH150_1.5m	✓		
EM1805158-005	23-Mar-2018 00:00	NEL-BH151_0.1m		✓	✓
EM1805158-006	23-Mar-2018 00:00	NEL-BH151_0.5m	✓		
EM1805158-007	23-Mar-2018 00:00	NEL-BH151_1.0m		✓	✓
EM1805158-008	23-Mar-2018 00:00	NEL-BH151_1.5m	✓		
EM1805158-012	23-Mar-2018 00:00	QC1001		✓	✓

<i>Laboratory sample ID</i>	<i>Client sampling date / time</i>	<i>Client sample ID</i>	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1805158-009	23-Mar-2018 00:00	TB105		✓
EM1805158-010	23-Mar-2018 00:00	FB105	✓	
EM1805158-011	23-Mar-2018 00:00	RB105	✓	

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
					Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator								
FB105	Clear Plastic Bottle - Natural		----	23-Mar-2018	23-Mar-2018	✓	26-Mar-2018	✗
RB105	Clear Plastic Bottle - Natural		----	23-Mar-2018	23-Mar-2018	✓	26-Mar-2018	✗

Requested Deliverables

ALL ACCOUNTS

- A4 - AU Tax Invoice (INV)

Email ap-fss@ghd.com

DAVID QUINN

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESDat (ESRN_ESDAT)
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)

[illegible]

GHD LAB REPORTS

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESDat (ESRN_ESDAT)
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1805158	Page	: 1 of 20
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 23-Mar-2018
Order number	:	Date Analysis Commenced	: 26-Mar-2018
C-O-C number	: ----	Issue Date	: 04-Apr-2018
Sampler	: SH		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 12		
No. of samples analysed	: 8		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1528702)									
EM1805082-014	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.3	7.2	1.38	0% - 20%
EM1805154-016	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.0	7.1	1.42	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1525416)									
EM1805154-032	Anonymous	EA055: Moisture Content	----	1	%	8.0	8.8	9.57	No Limit
EM1805237-002	Anonymous	EA055: Moisture Content	----	1	%	15.7	15.8	0.00	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1525385)									
EM1805158-001	NEL-BH150_0.1m	EG005T: Zinc	7440-66-6	5	mg/kg	47	50	5.74	0% - 50%
EM1805158-001	NEL-BH150_0.1m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	16	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	11	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	22	19	11.4	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
EM1805255-001	Anonymous	EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	84	91	7.60	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	20	30	39.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1525385) - continued									
EM1805255-001	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	29	42	35.9	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1525386)									
EM1805158-001	NEL-BH150_0.1m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1805255-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1532433)									
EM1805154-004	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1805158-012	QC1001	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1533443)									
EM1805158-001	NEL-BH150_0.1m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	1	<1	0.00	No Limit
EM1805275-005	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1529018)									
EM1805158-001	NEL-BH150_0.1m	EK040T: Fluoride	16984-48-8	40	mg/kg	310	320	0.00	No Limit
EM1805264-018	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	60	70	20.8	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1528766)									
EM1805158-001	NEL-BH150_0.1m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1805264-026	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1523440)									
EM1805158-001	NEL-BH150_0.1m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1805239-009	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1523440)									
EM1805158-001	NEL-BH150_0.1m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1805239-009	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1523440)									
EM1805158-001	NEL-BH150_0.1m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1523440) - continued									
EM1805158-001	NEL-BH150_0.1m	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1805239-009	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1528764)							
EM1805158-001	NEL-BH150_0.1m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1528764) - continued									
EM1805158-001	NEL-BH150_0.1m	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1805264-026	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1528764)									
EM1805158-001	NEL-BH150_0.1m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1805264-026	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EM1805158-001	NEL-BH150_0.1m	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1528764)									
EM1805158-001	NEL-BH150_0.1m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1528764) - continued									
EM1805158-001	NEL-BH150_0.1m	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1805264-026	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1528764)									
EM1805158-001	NEL-BH150_0.1m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1528764) - continued									
EM1805158-001	NEL-BH150_0.1m	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1805264-026	Anonymous	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1523440)									
EM1805158-001	NEL-BH150_0.1m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1805239-009	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1528765)									
EM1805158-001	NEL-BH150_0.1m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1805264-026	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

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 Work Order : EM1805158
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1528765) - continued									
EM1805264-026	Anonymous	EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1523440)									
EM1805158-001	NEL-BH150_0.1m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1805239-009	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1528765)									
EM1805158-001	NEL-BH150_0.1m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1805264-026	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1525307)									
EM1805148-006	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.39	7.37	0.271	0% - 20%
EM1805115-009	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	9.19	9.23	0.434	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1526491)									
EM1805282-002	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EM1805158-010	FB105	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1526493)									
EM1805158-010	FB105	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1805281-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.005	0.005	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1526493) - continued									
EM1805281-002	Anonymous	EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1526492)									
EM1805158-010	FB105	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1805281-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1529292)									
EM1805092-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1805260-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1525673)									
EM1805158-010	FB105	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1525312)									
EM1805158-010	FB105	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1805147-005	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.4	0.4	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1525189)									
EM1805225-161	Anonymous	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1524940)									
EM1805164-003	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1805255-032	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1524940)									
EM1805164-003	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1805255-032	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	70	69	0.00	0% - 50%
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1524940) - continued									
EM1805255-032	Anonymous	EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1524940)									
EM1805164-003	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1805255-032	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1524940)									
EM1805164-003	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1805255-032	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1524939)									
EM1805164-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1805255-032	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1525191)									
EM1805225-161	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1524939)									
EM1805164-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1805255-032	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1525191)									
EM1805225-161	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080: BTEXN (QC Lot: 1524939)									
EM1805164-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit

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 Work Order : EM1805158
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1524939) - continued									
EM1805164-003	Anonymous	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1805255-032	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)
				Concentration		LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1525385)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	91.3	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	85.4	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	90.2	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	86.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	86.7	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	92.4	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	96.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	89.9	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1525386)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	83.1	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1532433)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	96.2	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1533443)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	99.4	80	110
EK040T: Fluoride Total (QCLot: 1529018)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	100	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1528766)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	71.2	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1523440)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	93.6	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	100	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	98.1	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	97.4	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	98.3	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	98.8	74	114
EP074H: Naphthalene (QCLot: 1523440)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	106	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1523440)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	107	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	94.3	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1523440) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	96.7	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	92.9	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	93.7	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	98.1	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	94.9	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	102	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	93.3	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	103	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	99.3	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	95.3	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	107	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	83.3	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	96.9	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.9	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	91.3	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	87.2	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1528764)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	95.1	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	78.0	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	91.8	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	87.2	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	91.9	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	82.8	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	103	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	108	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	67.2	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1528764)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	90.1	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	84.3	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	84.9	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	80.1	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	86.6	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	71.2	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	93.1	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	73.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	87.3	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	82.4	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1528764)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	89.1	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	98.6	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	94.3	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	88.4	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	98.4	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	66.5	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	96.5	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	98.3	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	94.3	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	99.8	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	102	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	98.0	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	95.8	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	95.4	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	94.7	55	137
EP075I: Organochlorine Pesticides (QCLot: 1528764)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	89.6	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	88.7	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	89.7	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	89.8	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	102	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	98.9	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	101	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	103	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	103	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	103	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	101	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	98.3	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	104	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	134	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	110	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	101	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	99.4	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	99.5	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	89.6	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	90.2	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1523440)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	96.7	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1526491)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	105	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1526493)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.3	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	89.4	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.5	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.3	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	95.5	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.1	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.5	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	97.4	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.6	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1526492)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.8	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1529292)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	100	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1525673)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	98.6	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1525312)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	97.6	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1525189)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	91.0	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1524940)								



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1524940) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	105	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1524940)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	104	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	108	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	108	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	107	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	110	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	108	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	102	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	100	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	101	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	106	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	104	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	94.1	75	112
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	106	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	109	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1524940)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	105	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	108	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	104	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	108	62	119
EP074G: Trihalomethanes (QCLot: 1524940)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	106	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1525190)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	79.7	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	79.5	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	83.6	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	84.2	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	88.2	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	104	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	83.6	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	92.8	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	81.0	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	84.7	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	78.8	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	102	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	93.5	56	126

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound		CAS Number	LOR		Unit	Result	Spike Concentration	Spike Recovery (%) LCS
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1525190) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene		193-39-5	1	µg/L	<1.0	5 µg/L	82.3	53 123
EP075(SIM): Dibenz(a,h)anthracene		53-70-3	1	µg/L	<1.0	5 µg/L	78.9	53 125
EP075(SIM): Benzo(g,h,i)perylene		191-24-2	1	µg/L	<1.0	5 µg/L	83.5	53 125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1525198)								
EP075-EM: 2-Chlorophenol		95-57-8	2	µg/L	<2	10 µg/L	86.8	44 114
EP075-EM: 2.4-Dichlorophenol		120-83-2	2	µg/L	<2	10 µg/L	78.7	53 121
EP075-EM: 2.6-Dichlorophenol		87-65-0	2	µg/L	<2	10 µg/L	90.4	55 119
EP075-EM: 4-Chloro-3-methylphenol		59-50-7	4	µg/L	<4	10 µg/L	98.3	57 116
EP075-EM: 2.4.5-Trichlorophenol		95-95-4	2	µg/L	<2	10 µg/L	109	51 121
EP075-EM: 2.4.6-Trichlorophenol		88-06-2	2	µg/L	<2	10 µg/L	97.1	56 120
EP075-EM: 2.3.5.6-Tetrachlorophenol		935-95-5	2	µg/L	<2	10 µg/L	112	41 125
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol		4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	112	47 125
EP075-EM: Pentachlorophenol		87-86-5	2	µg/L	<2	20 µg/L	83.0	22 122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1525198)								
EP075-EM: Phenol		108-95-2	4	µg/L	<4	10 µg/L	30.5	20 57
EP075-EM: 2-Methylphenol		95-48-7	4	µg/L	<4	10 µg/L	82.4	49 107
EP075-EM: 3- & 4-Methylphenol		1319-77-3	4	µg/L	<4	20 µg/L	72.3	48 101
EP075-EM: 2-Nitrophenol		88-75-5	4	µg/L	<4	10 µg/L	90.4	53 123
EP075-EM: 2.4-Dimethylphenol		105-67-9	4	µg/L	<4	10 µg/L	108	52 128
EP075-EM: 2.4-Dinitrophenol		51-28-5	100	µg/L	<100	60 µg/L	121	21 130
EP075-EM: 4-Nitrophenol		100-02-7	50	µg/L	<50	60 µg/L	42.9	13 60
EP075-EM: 2-Methyl-4.6-dinitrophenol		8071-51-0	50	µg/L	<50	60 µg/L	92.8	56 126
EP075-EM: Dinoseb		88-85-7	50	µg/L	<50	60 µg/L	106	55 128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol		131-89-5	50	µg/L	<50	50 µg/L	114	32 135
EP075I: Organochlorine Pesticides (QCLot: 1525198)								
EP075-EM: alpha-BHC		319-84-6	0.5	µg/L	<0.5	10 µg/L	91.1	59 126
EP075-EM: Heptachlor		76-44-8	0.5	µg/L	<0.5	10 µg/L	97.8	59 131
EP075-EM: Aldrin		309-00-2	0.5	µg/L	<0.5	10 µg/L	93.2	59 133
EP075-EM: cis-Chlordane		5103-71-9	0.5	µg/L	<0.5	10 µg/L	95.6	61 133
EP075-EM: trans-Chlordane		5103-74-2	0.5	µg/L	<0.5	10 µg/L	93.7	60 132
EP075-EM: 4.4`-DDE		72-55-9	0.5	µg/L	<0.5	10 µg/L	97.2	56 130
EP075-EM: Dieldrin		60-57-1	0.5	µg/L	<0.5	10 µg/L	96.2	59 130
EP075-EM: 4.4`-DDD		72-54-8	0.5	µg/L	<0.5	10 µg/L	92.8	62 136
EP075-EM: 4.4`-DDT		50-29-3	0.5	µg/L	<0.5	10 µg/L	95.6	57 128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1524939)								
EP080: C6 - C9 Fraction		----	20	µg/L	<20	360 µg/L	108	68 125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1525191)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1525191) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	123	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	112	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	7856 µg/L	109	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1524939)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	107	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1525191)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	5225 µg/L	117	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	19994 µg/L	109	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1449 µg/L	116	58	137
EP080: BTEXN (QCLot: 1524939)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	106	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	104	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	110	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	109	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	107	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	96.3	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1525385)							
EM1805158-003	NEL-BH150_1.0m	EG005T: Arsenic	7440-38-2	50 mg/kg	94.1	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	90.1	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	91.2	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	93.8	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	81.5	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	89.2	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	85.3	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	88.0	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1525386)							
EM1805158-003	NEL-BH150_1.0m	EG035T: Mercury	7439-97-6	5 mg/kg	85.2	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1532433)							
EM1805154-009	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	61.9	58	114



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1533443)							
EM1805158-003	NEL-BH150_1.0m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	90.4	77	113
EK040T: Fluoride Total (QCLot: 1529018)							
EM1805158-003	NEL-BH150_1.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1528766)							
EM1805158-007	NEL-BH151_1.0m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	67.0	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1523440)							
EM1805158-003	NEL-BH150_1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	109	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	110	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1523440)							
EM1805158-003	NEL-BH150_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	113	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	107	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	106	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1528764)							
EM1805158-003	NEL-BH150_1.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	105	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	90.6	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	48.9	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1528764)							
EM1805158-003	NEL-BH150_1.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	95.7	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	79.6	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1528764)							
EM1805158-003	NEL-BH150_1.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	110	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	107	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1523440)							
EM1805158-003	NEL-BH150_1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	81.2	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1528765)							
EM1805158-005	NEL-BH151_0.1m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	106	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	107	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	100	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1523440)							
EM1805158-003	NEL-BH150_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	78.6	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1528765)							
EM1805158-005	NEL-BH151_0.1m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	105	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	103	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	99.5	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1526493)							
EM1805158-010	FB105	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	97.4	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	88.3	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.8	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	95.5	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	94.4	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	95.1	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1526492)							
EM1805158-011	RB105	EG035F: Mercury	7439-97-6	0.01 mg/L	95.8	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1529292)							
EM1805092-002	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	103	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1525673)							
EM1805158-011	RB105	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	90.0	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1525312)							
EM1805147-006	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	103	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1524940)							
EM1805164-004	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	123	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	99.0	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1524940)							
EM1805164-004	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	99.7	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1524939)							
EM1805164-004	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	91.6	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1524939)							
EM1805164-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	84.9	44	122
EP080: BTEXN (QCLot: 1524939)							
EM1805164-004	Anonymous	EP080: Benzene	71-43-2	20 µg/L	102	68	130
		EP080: Toluene	108-88-3	20 µg/L	102	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1805158	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 23-Mar-2018
Site	: North East Link	Issue Date	: 04-Apr-2018
Sampler	: SH	No. of samples received	: 12
Order number	:	No. of samples analysed	: 8

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
FB105, RB105	----	----	----	27-Mar-2018	23-Mar-2018	4

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	14	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)		23-Mar-2018	28-Mar-2018	30-Mar-2018	✔	28-Mar-2018	28-Mar-2018	✔
NEL-BH150_0.1m,	NEL-BH150_1.0m,							
NEL-BH151_0.1m,	NEL-BH151_1.0m,							
QC1001								
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		23-Mar-2018	----	----	----	27-Mar-2018	06-Apr-2018	✔
NEL-BH150_0.1m,	NEL-BH150_1.0m,							
NEL-BH151_0.1m,	NEL-BH151_1.0m,							
QC1001								



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	30-Mar-2018	19-Sep-2018	✓	03-Apr-2018	19-Sep-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	30-Mar-2018	20-Apr-2018	✓	03-Apr-2018	20-Apr-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	29-Mar-2018	20-Apr-2018	✓	29-Mar-2018	05-Apr-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	29-Mar-2018	06-Apr-2018	✓	03-Apr-2018	12-Apr-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	28-Mar-2018	20-Apr-2018	✓	29-Mar-2018	20-Apr-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	28-Mar-2018	06-Apr-2018	✓	29-Mar-2018	07-May-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	26-Mar-2018	30-Mar-2018	✓	27-Mar-2018	30-Mar-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	26-Mar-2018	30-Mar-2018	✓	27-Mar-2018	30-Mar-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	26-Mar-2018	30-Mar-2018	✓	27-Mar-2018	30-Mar-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	28-Mar-2018	06-Apr-2018	✓	29-Mar-2018	07-May-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	28-Mar-2018	06-Apr-2018	✓	29-Mar-2018	07-May-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	28-Mar-2018	06-Apr-2018	✓	29-Mar-2018	07-May-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	28-Mar-2018	06-Apr-2018	✓	29-Mar-2018	07-May-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	26-Mar-2018	30-Mar-2018	✓	27-Mar-2018	30-Mar-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-BH150_0.1m, NEL-BH151_0.1m, QC1001	NEL-BH150_1.0m, NEL-BH151_1.0m,	23-Mar-2018	28-Mar-2018	06-Apr-2018	✓	29-Mar-2018	07-May-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)		23-Mar-2018	26-Mar-2018	30-Mar-2018	✔	27-Mar-2018	30-Mar-2018	✔
NEL-BH150_0.1m,	NEL-BH150_1.0m,							
NEL-BH151_0.1m,	NEL-BH151_1.0m,							
QC1001								
Soil Glass Jar - Unpreserved (EP071-EM)		23-Mar-2018	28-Mar-2018	06-Apr-2018	✔	29-Mar-2018	07-May-2018	✔
NEL-BH150_0.1m,	NEL-BH150_1.0m,							
NEL-BH151_0.1m,	NEL-BH151_1.0m,							
QC1001								

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Holding time broken	Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation		Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) FB105,	RB105	23-Mar-2018	----	----	----	27-Mar-2018	23-Mar-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) FB105,	RB105	23-Mar-2018	----	----	----	29-Mar-2018	19-Sep-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) FB105,	RB105	23-Mar-2018	----	----	----	03-Apr-2018	06-Apr-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) FB105,	RB105	23-Mar-2018	----	----	----	28-Mar-2018	20-Apr-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) FB105,	RB105	23-Mar-2018	----	----	----	27-Mar-2018	06-Apr-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) FB105,	RB105	23-Mar-2018	----	----	----	27-Mar-2018	20-Apr-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) FB105,	RB105	23-Mar-2018	28-Mar-2018	30-Mar-2018	✓	29-Mar-2018	07-May-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) FB105,	RB105	23-Mar-2018	27-Mar-2018	06-Apr-2018	✓	28-Mar-2018	06-Apr-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB105,	RB105	23-Mar-2018	27-Mar-2018	06-Apr-2018	✓	28-Mar-2018	06-Apr-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB105,	RB105	23-Mar-2018	27-Mar-2018	06-Apr-2018	✓	28-Mar-2018	06-Apr-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) FB105,	RB105	23-Mar-2018	27-Mar-2018	06-Apr-2018	✓	28-Mar-2018	06-Apr-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB105,	RB105	23-Mar-2018	28-Mar-2018	30-Mar-2018	✓	29-Mar-2018	07-May-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB105,	RB105	23-Mar-2018	28-Mar-2018	30-Mar-2018	✓	29-Mar-2018	07-May-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB105,	RB105	23-Mar-2018	28-Mar-2018	30-Mar-2018	✓	29-Mar-2018	07-May-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) FB105,	RB105	23-Mar-2018	28-Mar-2018	30-Mar-2018	✓	29-Mar-2018	07-May-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) FB105,	RB105	23-Mar-2018	28-Mar-2018	30-Mar-2018	✓	29-Mar-2018	07-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB105, RB105	FB105,	23-Mar-2018	27-Mar-2018	06-Apr-2018	✓	28-Mar-2018	06-Apr-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) FB105,	RB105	23-Mar-2018	28-Mar-2018	30-Mar-2018	✓	29-Mar-2018	07-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB105, RB105	FB105,	23-Mar-2018	27-Mar-2018	06-Apr-2018	✓	28-Mar-2018	06-Apr-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) TB105, RB105	FB105,	23-Mar-2018	27-Mar-2018	06-Apr-2018	✓	28-Mar-2018	06-Apr-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	20	15.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	8	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	14	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	5	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	14	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	5	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	20	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Certificate of Analysis

GHD Melbourne
Level 8, 180 Lonsdale St
Melbourne
VIC 3000



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: David Quinn

Report 591177-S
Project name NORTH EAST LINK - CONTAMINATION
Project ID 31/35006/0910
Received Date Mar 26, 2018

Client Sample ID			QC2001
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ma30606
Date Sampled			Mar 23, 2018
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
Volatile Organics			
1.1-Dichloroethane	0.5	mg/kg	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5
Allyl chloride	0.5	mg/kg	< 0.5
Benzene	0.1	mg/kg	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5
Bromochloromethane	0.5	mg/kg	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5
Bromoform	0.5	mg/kg	< 0.5
Bromomethane	0.5	mg/kg	< 0.5

Client Sample ID			QC2001
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ma30606
Date Sampled			Mar 23, 2018
Test/Reference	LOR	Unit	
Volatile Organics			
Carbon disulfide	0.5	mg/kg	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5
Chloroethane	0.5	mg/kg	< 0.5
Chloroform	0.5	mg/kg	< 0.5
Chloromethane	0.5	mg/kg	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1
Iodomethane	0.5	mg/kg	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5
o-Xylene	0.1	mg/kg	< 0.1
Styrene	0.5	mg/kg	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5
Toluene	0.1	mg/kg	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5
Xylenes - Total	0.3	mg/kg	< 0.3
Total MAH*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5
4-Bromofluorobenzene (surr.)	1	%	100
Toluene-d8 (surr.)	1	%	94
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5

Client Sample ID			QC2001
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ma30606
Date Sampled			Mar 23, 2018
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	55
p-Terphenyl-d14 (surr.)	1	%	88
Organochlorine Pesticides			
Chlordanes - Total	0.1	mg/kg	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05
a-BHC	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-BHC	0.05	mg/kg	< 0.05
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05
Toxaphene	1	mg/kg	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	120
Tetrachloro-m-xylene (surr.)	1	%	67
Polychlorinated Biphenyls			
Aroclor-1016	0.1	mg/kg	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1

Client Sample ID			QC2001
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ma30606
Date Sampled			Mar 23, 2018
Test/Reference	LOR	Unit	
Polychlorinated Biphenyls			
Total PCB*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	120
Tetrachloro-m-xylene (surr.)	1	%	67
Phenols (Halogenated)			
2-Chlorophenol	0.5	mg/kg	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	< 1
2,4,6-Trichlorophenol	1.0	mg/kg	< 1
2,6-Dichlorophenol	0.5	mg/kg	< 0.5
4-Chloro-3-methylphenol	1.0	mg/kg	< 1
Pentachlorophenol	1.0	mg/kg	< 1
Tetrachlorophenols - Total	1.0	mg/kg	< 1
Total Halogenated Phenol*	1	mg/kg	< 1
Phenols (non-Halogenated)			
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	< 20
2-Methyl-4,6-dinitrophenol	5	mg/kg	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2
2-Nitrophenol	1.0	mg/kg	< 1
2,4-Dimethylphenol	0.5	mg/kg	< 0.5
2,4-Dinitrophenol	5	mg/kg	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4
4-Nitrophenol	5	mg/kg	< 5
Dinoseb	20	mg/kg	< 20
Phenol	0.5	mg/kg	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20
Phenol-d6 (surr.)	1	%	68
Chromium (hexavalent)	1	mg/kg	< 1
Cyanide (total)	5	mg/kg	< 5
Fluoride	100	mg/kg	380
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	8.9
% Moisture	1	%	25
Heavy Metals			
Arsenic	2	mg/kg	2.1
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	33
Copper	5	mg/kg	9.0
Lead	5	mg/kg	15
Mercury	0.1	mg/kg	< 0.1
Molybdenum	5	mg/kg	< 5
Nickel	5	mg/kg	12
Selenium	2	mg/kg	< 2
Silver	0.2	mg/kg	< 0.2
Tin	10	mg/kg	< 10
Zinc	5	mg/kg	25

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Vic EPA IWRG 621 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Mar 28, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
Volatile Organics	Melbourne	Mar 28, 2018	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Mar 28, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Mar 28, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Mar 28, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	Mar 28, 2018	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Melbourne	Mar 28, 2018	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Phenols (Halogenated)	Melbourne	Mar 28, 2018	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soils by GCMS			
Phenols (non-Halogenated)	Melbourne	Mar 28, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soils by GCMS			
Chromium (hexavalent)	Melbourne	Mar 28, 2018	28 Day
- Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)			
Cyanide (total)	Melbourne	Mar 28, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride	Melbourne	Mar 29, 2018	28 Day
- Method: LTM-INO-4150 Determination of Total Fluoride PART A – CIC			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	Mar 28, 2018	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
IWRG 621 Metals : Metals M12	Melbourne	Mar 28, 2018	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	Mar 26, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name: GHD Pty Ltd VIC
Address: Level 8, 180 Lonsdale St
Melbourne
VIC 3000

Project Name: NORTH EAST LINK - CONTAMINATION
Project ID: 31/35006/0910

Order No.:
Report #: 591177
Phone: 8687 8000
Fax: 8687 8111

Received: Mar 26, 2018 2:35 PM
Due: Apr 4, 2018
Priority: 5 Day
Contact Name: David Quinn

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Moisture Set	Vic EPA IW/RG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	QC2001	Mar 23, 2018		Soil	M18-Ma30606	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5			0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5			0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5			0.5	Pass	
Allyl chloride	mg/kg	< 0.5			0.5	Pass	
Benzene	mg/kg	< 0.1			0.1	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromochloromethane	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dibromomethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
trans-1,2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1,3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4,5-Trichlorophenol	mg/kg	< 1			1	Pass	
2,4,6-Trichlorophenol	mg/kg	< 1			1.0	Pass	
2,6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1.0	Pass	
Pentachlorophenol	mg/kg	< 1			1.0	Pass	
Tetrachlorophenols - Total	mg/kg	< 1			1.0	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4,6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2,4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Fluoride	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Molybdenum	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 0.2			0.2	Pass	
Tin	mg/kg	< 10			10	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	123			70-130	Pass	
TRH C10-C14	%	75			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	86			70-130	Pass	
1.1.1-Trichloroethane	%	99			70-130	Pass	
1.2-Dichlorobenzene	%	117			70-130	Pass	
1.2-Dichloroethane	%	107			70-130	Pass	
Benzene	%	109			70-130	Pass	
Ethylbenzene	%	119			70-130	Pass	
m&p-Xylenes	%	120			70-130	Pass	
Toluene	%	110			70-130	Pass	
Trichloroethene	%	98			70-130	Pass	
Xylenes - Total	%	120			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	106			70-130	Pass	
TRH C6-C10	%	117			70-130	Pass	
TRH >C10-C16	%	79			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	82			70-130	Pass	
Acenaphthylene	%	88			70-130	Pass	
Anthracene	%	86			70-130	Pass	
Benz(a)anthracene	%	86			70-130	Pass	
Benzo(a)pyrene	%	79			70-130	Pass	
Benzo(b&j)fluoranthene	%	85			70-130	Pass	
Benzo(g,h,i)perylene	%	70			70-130	Pass	
Benzo(k)fluoranthene	%	87			70-130	Pass	
Chrysene	%	83			70-130	Pass	
Dibenz(a,h)anthracene	%	77			70-130	Pass	
Fluoranthene	%	84			70-130	Pass	
Fluorene	%	83			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	75			70-130	Pass	
Naphthalene	%	84			70-130	Pass	
Phenanthrene	%	86			70-130	Pass	
Pyrene	%	83			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	78			70-130	Pass	
4,4'-DDE	%	81			70-130	Pass	
4,4'-DDT	%	116			70-130	Pass	
a-BHC	%	77			70-130	Pass	
Aldrin	%	79			70-130	Pass	
b-BHC	%	73			70-130	Pass	
d-BHC	%	73			70-130	Pass	
Dieldrin	%	80			70-130	Pass	
Endosulfan I	%	81			70-130	Pass	
Endosulfan II	%	83			70-130	Pass	
Endosulfan sulphate	%	85			70-130	Pass	
Endrin	%	89			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	%	81			70-130	Pass	
Endrin ketone	%	85			70-130	Pass	
g-BHC (Lindane)	%	78			70-130	Pass	
Heptachlor	%	82			70-130	Pass	
Heptachlor epoxide	%	79			70-130	Pass	
Hexachlorobenzene	%	75			70-130	Pass	
Methoxychlor	%	108			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	89			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	87			30-130	Pass	
2,4-Dichlorophenol	%	79			30-130	Pass	
2,4,5-Trichlorophenol	%	110			30-130	Pass	
2,4,6-Trichlorophenol	%	80			30-130	Pass	
2,6-Dichlorophenol	%	81			30-130	Pass	
4-Chloro-3-methylphenol	%	74			30-130	Pass	
Pentachlorophenol	%	47			30-130	Pass	
Tetrachlorophenols - Total	%	76			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	%	31			30-130	Pass	
2-Methyl-4,6-dinitrophenol	%	39			30-130	Pass	
2-Methylphenol (o-Cresol)	%	69			30-130	Pass	
2-Nitrophenol	%	76			30-130	Pass	
2,4-Dimethylphenol	%	73			30-130	Pass	
2,4-Dinitrophenol	%	34			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	82			30-130	Pass	
4-Nitrophenol	%	76			30-130	Pass	
Dinoseb	%	51			30-130	Pass	
Phenol	%	84			30-130	Pass	
LCS - % Recovery							
Chromium (hexavalent)	%	97			70-130	Pass	
Cyanide (total)	%	99			70-130	Pass	
Fluoride	%	107			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	94			80-120	Pass	
Cadmium	%	97			80-120	Pass	
Chromium	%	99			80-120	Pass	
Copper	%	95			80-120	Pass	
Lead	%	103			80-120	Pass	
Mercury	%	92			75-125	Pass	
Molybdenum	%	97			80-120	Pass	
Nickel	%	95			80-120	Pass	
Selenium	%	91			80-120	Pass	
Silver	%	106			80-120	Pass	
Tin	%	98			80-120	Pass	
Zinc	%	92			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M18-Ma32365	NCP	%	119		70-130	Pass	
Spike - % Recovery								
Volatile Organics				Result 1				
1.1-Dichloroethene	M18-Ma32365	NCP	%	79		70-130	Pass	
1.1.1-Trichloroethane	M18-Ma32365	NCP	%	80		70-130	Pass	
1.2-Dichlorobenzene	M18-Ma32365	NCP	%	112		70-130	Pass	
1.2-Dichloroethane	M18-Ma32365	NCP	%	92		70-130	Pass	
Benzene	M18-Ma32365	NCP	%	96		70-130	Pass	
Ethylbenzene	M18-Ma32365	NCP	%	108		70-130	Pass	
m&p-Xylenes	M18-Ma32365	NCP	%	110		70-130	Pass	
o-Xylene	M18-Ma32365	NCP	%	103		70-130	Pass	
Toluene	M18-Ma32365	NCP	%	98		70-130	Pass	
Trichloroethene	M18-Ma32365	NCP	%	87		70-130	Pass	
Xylenes - Total	M18-Ma32365	NCP	%	108		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M18-Ma32365	NCP	%	106		70-130	Pass	
TRH C6-C10	M18-Ma32365	NCP	%	113		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M18-Ma32930	NCP	%	82		70-130	Pass	
Acenaphthylene	M18-Ma32930	NCP	%	90		70-130	Pass	
Anthracene	M18-Ma32930	NCP	%	86		70-130	Pass	
Benz(a)anthracene	M18-Ma32930	NCP	%	94		70-130	Pass	
Benzo(a)pyrene	M18-Ma32930	NCP	%	76		70-130	Pass	
Benzo(b&j)fluoranthene	M18-Ma32930	NCP	%	70		70-130	Pass	
Benzo(g,h,i)perylene	M18-Ma32930	NCP	%	75		70-130	Pass	
Benzo(k)fluoranthene	M18-Ma32930	NCP	%	89		70-130	Pass	
Chrysene	M18-Ma32930	NCP	%	74		70-130	Pass	
Dibenz(a,h)anthracene	M18-Ma32930	NCP	%	83		70-130	Pass	
Fluoranthene	M18-Ma32930	NCP	%	92		70-130	Pass	
Fluorene	M18-Ma32930	NCP	%	87		70-130	Pass	
Indeno(1,2,3-cd)pyrene	M18-Ma32930	NCP	%	85		70-130	Pass	
Naphthalene	M18-Ma32930	NCP	%	72		70-130	Pass	
Phenanthrene	M18-Ma32930	NCP	%	92		70-130	Pass	
Pyrene	M18-Ma32930	NCP	%	83		70-130	Pass	
Spike - % Recovery								
Organochlorine Pesticides				Result 1				
4,4'-DDD	M18-Ma27436	NCP	%	120		70-130	Pass	
4,4'-DDE	M18-Ma27436	NCP	%	127		70-130	Pass	
4,4'-DDT	M18-Ma30875	NCP	%	int		70-130	Fail	Q08
a-BHC	M18-Ma27436	NCP	%	98		70-130	Pass	
Aldrin	M18-Ma27436	NCP	%	110		70-130	Pass	
b-BHC	M18-Ma27436	NCP	%	94		70-130	Pass	
d-BHC	M18-Ma27436	NCP	%	105		70-130	Pass	
Dieldrin	M18-Ma27436	NCP	%	128		70-130	Pass	
Endosulfan I	M18-Ma27436	NCP	%	115		70-130	Pass	
Endosulfan II	M18-Ma27436	NCP	%	127		70-130	Pass	
Endosulfan sulphate	M18-Ma27436	NCP	%	124		70-130	Pass	
Endrin	M18-Ma27436	NCP	%	108		70-130	Pass	
Endrin aldehyde	M18-Ma27436	NCP	%	114		70-130	Pass	
Endrin ketone	M18-Ma27436	NCP	%	122		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
g-BHC (Lindane)	M18-Ma27436	NCP	%	99			70-130	Pass	
Heptachlor	M18-Ma27436	NCP	%	80			70-130	Pass	
Heptachlor epoxide	M18-Ma27436	NCP	%	116			70-130	Pass	
Hexachlorobenzene	M18-Ma27436	NCP	%	93			70-130	Pass	
Methoxychlor	M18-Ma30875	NCP	%	120			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	M18-Ma28147	NCP	%	92			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	M18-Ma32930	NCP	%	91			30-130	Pass	
2,4-Dichlorophenol	M18-Ma32930	NCP	%	81			30-130	Pass	
2,4,5-Trichlorophenol	M18-Ma32930	NCP	%	120			30-130	Pass	
2,4,6-Trichlorophenol	M18-Ma32930	NCP	%	93			30-130	Pass	
2,6-Dichlorophenol	M18-Ma32930	NCP	%	81			30-130	Pass	
4-Chloro-3-methylphenol	M18-Ma32930	NCP	%	78			30-130	Pass	
Pentachlorophenol	M18-Ma32930	NCP	%	74			30-130	Pass	
Tetrachlorophenols - Total	M18-Ma32930	NCP	%	95			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Cyclohexyl-4,6-dinitrophenol	M18-Ma33277	NCP	%	44			30-130	Pass	
2-Methyl-4,6-dinitrophenol	M18-Ma28100	NCP	%	38			30-130	Pass	
2-Methylphenol (o-Cresol)	M18-Ma32930	NCP	%	100			30-130	Pass	
2-Nitrophenol	M18-Ma32930	NCP	%	75			30-130	Pass	
2,4-Dimethylphenol	M18-Ma32930	NCP	%	75			30-130	Pass	
2,4-Dinitrophenol	M18-Ma28100	NCP	%	38			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M18-Ma32930	NCP	%	84			30-130	Pass	
4-Nitrophenol	M18-Ma32930	NCP	%	105			30-130	Pass	
Dinoseb	M18-Ma32930	NCP	%	39			30-130	Pass	
Phenol	M18-Ma32930	NCP	%	92			30-130	Pass	
Spike - % Recovery									
				Result 1					
Chromium (hexavalent)	M18-Ma33004	NCP	%	94			70-130	Pass	
Fluoride	M18-Ma30661	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M18-Ma30362	NCP	%	97			75-125	Pass	
Cadmium	M18-Ma30362	NCP	%	105			75-125	Pass	
Chromium	M18-Ma30362	NCP	%	89			75-125	Pass	
Copper	M18-Ma30362	NCP	%	102			75-125	Pass	
Lead	M18-Ma30362	NCP	%	105			75-125	Pass	
Mercury	M18-Ma30362	NCP	%	91			70-130	Pass	
Molybdenum	M18-Ma30362	NCP	%	105			75-125	Pass	
Nickel	M18-Ma30362	NCP	%	100			75-125	Pass	
Selenium	M18-Ma30362	NCP	%	94			75-125	Pass	
Silver	M18-Ma30362	NCP	%	104			75-125	Pass	
Tin	M18-Ma30362	NCP	%	107			75-125	Pass	
Zinc	M18-Ma30362	NCP	%	98			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	B18-Ma25047	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M18-Ap02602	NCP	mg/kg	25	< 20	23	30%	Pass	
TRH C15-C28	M18-Ap02602	NCP	mg/kg	51	< 50	5.0	30%	Pass	
TRH C29-C36	M18-Ap02602	NCP	mg/kg	< 50	< 50	<1	30%	Pass	

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
1.1-Dichloroethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.4-Trichlorobenzene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Hexachlorobutadiene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1-Dichloroethene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1-Trichloroethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1.2-Tetrachloroethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2-Trichloroethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2.2-Tetrachloroethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dibromoethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichlorobenzene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloroethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloropropane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.3-Trichloropropane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.4-Trimethylbenzene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichlorobenzene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichloropropane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3.5-Trimethylbenzene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.4-Dichlorobenzene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Butanone (MEK)	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Propanone (Acetone)	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chlorotoluene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Methyl-2-pentanone (MIBK)	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Allyl chloride	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzene	B18-Ma25047	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Bromobenzene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromochloromethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromodichloromethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromoform	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromomethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon disulfide	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon Tetrachloride	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chlorobenzene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroform	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloromethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.2-Dichloroethene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.3-Dichloropropene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromochloromethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromomethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dichlorodifluoromethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Ethylbenzene	B18-Ma25047	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Iodomethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Isopropyl benzene (Cumene)	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
m&p-Xylenes	B18-Ma25047	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methylene Chloride	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
o-Xylene	B18-Ma25047	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Styrene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Tetrachloroethene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Toluene	B18-Ma25047	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
trans-1.2-Dichloroethene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
trans-1.3-Dichloropropene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichloroethene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichlorofluoromethane	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Vinyl chloride	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Xylenes - Total	B18-Ma25047	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	B18-Ma25047	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	B18-Ma25047	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	M18-Ap02602	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	M18-Ap02602	NCP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	M18-Ap02602	NCP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	M18-Ma30739	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	M18-Ma30739	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Toxaphene	M18-Ma30739	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	M18-Ma30739	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1221	M18-Ma30739	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	M18-Ma30739	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1242	M18-Ma30739	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1248	M18-Ma30739	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1254	M18-Ma30739	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass

Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1260	M18-Ma30739	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Total PCB*	M18-Ma30739	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	M18-Ma32505	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	M18-Ma32505	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	M18-Ma32505	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	M18-Ma32505	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	M18-Ma32505	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	M18-Ma32505	NCP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	M18-Ma32505	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	M18-Ma32505	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
2-Nitrophenol	M18-Ma32505	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dinitrophenol	M18-Ma32505	NCP	mg/kg	< 5	< 5	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M18-Ma32505	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	M18-Ma32505	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	M18-Ma32505	NCP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	M18-Ma32505	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M18-Ma30177	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Cyanide (total)	M18-Ma32494	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Fluoride	M18-Ma30659	NCP	mg/kg	110	< 100	18	30%	Pass
pH (1:5 Aqueous extract at 25°C as rec.)	M18-Ma32466	NCP	pH Units	8.5	8.4	pass	30%	Pass
% Moisture	M18-Ma30596	NCP	%	14	14	1.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M18-Ma30285	NCP	mg/kg	7.4	8.9	19	30%	Pass
Cadmium	M18-Ma30285	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M18-Ma30285	NCP	mg/kg	23	22	4.0	30%	Pass
Copper	M18-Ma30285	NCP	mg/kg	16	15	8.0	30%	Pass
Lead	M18-Ma30285	NCP	mg/kg	46	38	19	30%	Pass
Mercury	M18-Ma30285	NCP	mg/kg	0.1	< 0.1	20	30%	Pass
Molybdenum	M18-Ma30285	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Nickel	M18-Ma30285	NCP	mg/kg	19	18	7.0	30%	Pass
Selenium	M18-Ma30285	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M18-Ma30285	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tin	M18-Ma30285	NCP	mg/kg	< 10	< 10	<1	30%	Pass
Zinc	M18-Ma30285	NCP	mg/kg	62	58	8.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Mary Makarios	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacallis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Michael Brancati	Senior Analyst-Inorganic (VIC)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EM1805857**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 8
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 23-Mar-2018 17:20
Date Analysis Commenced : 06-Apr-2018
Issue Date : 11-Apr-2018 09:39



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- This is a rebatch of EM1805229.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-BH151_1.5m	----	----	----	----
Client sampling date / time				23-Mar-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1805857-001	-----	-----	-----	-----
Result				----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	6.8	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	23.9	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	6	----	----	----	----
Lead	7439-92-1	5	mg/kg	9	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	9	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	18	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	330	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH151_1.5m	----	----	----	----
Client sampling date / time					23-Mar-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1805857-001	-----	-----	-----	-----
				Result	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH151_1.5m	----	----	----	----
				Client sampling date / time	23-Mar-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1805857-001	-----	-----	-----	-----
					Result	----	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH151_1.5m	----	----	----	----
Client sampling date / time				23-Mar-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1805857-001	-----	-----	-----	-----
Result				----	----	----	----	----

EP075I: Organochlorine Pesticides - Continued

alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
---------------------	------	----	-------	-----	------	------	------	------



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH151_1.5m	----	----	----	----
Client sampling date / time					23-Mar-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1805857-001	-----	-----	-----	-----
				Result		----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		81.6	----	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		84.0	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		81.2	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		71.0	----	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		107	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		81.5	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		93.3	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		89.8	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		84.1	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		110	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%		111	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		125	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Shirley LeCornu

re-batch

MS: 548.
#8.

From: Menon, Venesa <venesa.menon@aecom.com>
Sent: Friday, 6 April 2018 5:09 PM
To: Shirley LeCornu
Cc: Rosli, Nazuha
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1805158 | Overall Description: North East Link - Contamination

Lab ID
①

Hi Shirley,

As discussed, could you please analyse sample NEL-BH151_1.5m for IWRG621 analysis, noting the breach in holding time for pH and some VOCs.

Thank you.

Regards,
Venesa Menon
Senior Chemical Engineer
D +61 3 9653 8759 M +61 434 841 716
venesa.menon@aecom.com

MS: 1307.
Su 6/4.

Environmental Division
Melbourne
Work Order Reference
EM1805857

AECOM
Collins Square, Level 10, Tower Two, 727 Collins Street, Melbourne, VIC 3008
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aecom.com



Telephone : + 61-3-9549 9600

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From: Rosli, Nazuha
Sent: Thursday, 5 April 2018 8:01 AM
To: Menon, Venesa
Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1805158 | Overall Description: North East Link - Contamination

Thanks.

Nazuha Rosli
Senior Environmental Engineer
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From: David Quinn [<mailto:David.Quinn@ghd.com>]
Sent: Wednesday, 4 April 2018 5:28 PM
To: Rosli, Nazuha
Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1805158 | Overall Description: North East Link - Contamination

Hi Nazuha

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1805857

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : ----</p> <p>Sampler :</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 3</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Dates

<p>Date Samples Received : 23-Mar-2018 17:20</p> <p>Client Requested Due : 16-Apr-2018</p> <p>Date :</p>	<p>Issue Date : 06-Apr-2018</p> <p>Scheduled Reporting Date : 16-Apr-2018</p>
----------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------

Delivery Details

<p>Mode of Delivery : Samples On Hand</p> <p>No. of coolers/boxes : ----</p> <p>Receipt Detail :</p>	<p>Security Seal : Not Available</p> <p>Temperature : ----</p> <p>No. of samples received / analysed : 1 / 1</p>
------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1805229.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1805857-001	23-Mar-2018 00:00	NEL-BH151_1.5m	✓	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: SOIL

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
					Date	Evaluation	Date	Evaluation
EA001: pH in soil using a 0.01M CaCl2 extract								
NEL-BH151_1.5m	Soil Glass Jar - Unpreserved	30-Mar-2018	30-Mar-2018	23-Mar-2018	✓	06-Apr-2018	✗	
EP074-UT: Volatile Organic Compounds - Ultra-trace								
NEL-BH151_1.5m	Soil Glass Jar - Unpreserved	30-Mar-2018	30-Mar-2018	23-Mar-2018	✓	06-Apr-2018	✗	

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1805857	Page	: 1 of 11
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 23-Mar-2018
Order number	: ----	Date Analysis Commenced	: 06-Apr-2018
C-O-C number	: ----	Issue Date	: 11-Apr-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1551971)									
EM1805857-001	NEL-BH151_1.5m	EA001: pH (CaCl2)	----	0.1	pH Unit	6.8	6.6	2.98	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1549850)									
EM1805857-001	NEL-BH151_1.5m	EA055: Moisture Content	----	0.1	%	23.9	23.1	3.63	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1553121)									
EM1805791-013	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	230	259	11.7	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	79	85	7.55	0% - 50%
EM1805884-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	10	13.5	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	7	14.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	27	21	27.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	30	28	7.62	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1553122)									
EM1805791-013	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1805884-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1552261)									
EM1805839-019	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1549818)									
EM1805857-001	NEL-BH151_1.5m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1551972)									
EM1805822-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	<40	<40	0.00	No Limit
EM1805865-004	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	<40	<40	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1549658)									
EM1805857-001	NEL-BH151_1.5m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1551881)									
EM1805822-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1805857-001	NEL-BH151_1.5m	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
	EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EP074H: Naphthalene (QC Lot: 1551881)									
EM1805822-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1805857-001	NEL-BH151_1.5m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1551881)									
EM1805822-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1551881) - continued									
EM1805822-001	Anonymous	EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit		
EM1805857-001	NEL-BH151_1.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1549656)							
EM1805857-001	NEL-BH151_1.5m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1549656)									
EM1805857-001	NEL-BH151_1.5m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit	
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1549656)									
EM1805857-001	NEL-BH151_1.5m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1549656)									
EM1805857-001	NEL-BH151_1.5m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1549656) - continued									
EM1805857-001	NEL-BH151_1.5m	EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1549657)									
EM1805857-001	NEL-BH151_1.5m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1551881)									
EM1805822-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1805857-001	NEL-BH151_1.5m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1549657)									
EM1805857-001	NEL-BH151_1.5m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1551881)									
EM1805822-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1805857-001	NEL-BH151_1.5m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1553121)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	81.1	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	85.2	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	78.3	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	82.4	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	102	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	89.9	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	95.9	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	103	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	82.5	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1553122)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	77.0	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1552261)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	101	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1549818)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	97.4	80	110
EK040T: Fluoride Total (QCLot: 1551972)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	98.5	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1549658)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	85.4	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1551881)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	102	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	102	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	102	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	100	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	106	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	101	74	114
EP074H: Naphthalene (QCLot: 1551881)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	110	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1551881)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	100	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	95.5	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1551881) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	107	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	96.8	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	99.3	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	98.6	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	97.6	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	94.9	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	106	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	98.7	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	106	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	95.8	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	94.7	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	106	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	80.6	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	105	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	99.2	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	101	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	89.4	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1549656)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	108	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	92.7	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	94.3	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	88.0	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	96.8	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	86.4	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	93.6	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	96.4	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	73.2	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1549656)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	79.7	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	97.9	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	99.6	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	92.6	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	104	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	121	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	95.7	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	87.6	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	95.7	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	83.4	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1549656)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	95.6	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	99.2	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	100	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	95.9	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	99.1	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	66.1	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	97.8	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	97.3	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	93.4	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	101	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	100.0	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	91.8	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	101	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	102	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	102	55	137
EP075I: Organochlorine Pesticides (QCLot: 1549656)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	93.9	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	93.5	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	92.9	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	94.5	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	100	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	99.8	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	100	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	101	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	100	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	102	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	101	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	99.1	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	103	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	94.5	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	67.0	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	98.8	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	98.7	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	99.9	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	93.6	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	94.5	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1549657)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	86.8	73	134



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1549657) - continued								
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	99.5	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	91.4	77	116
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1551881)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	106	69	114
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1549657)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	91.2	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	97.9	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	83.6	68	124
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1551881)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	104	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
	X							

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1553121)							
EM1805822-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	99.3	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	108	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	108	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	84.4	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	111	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	94.2	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	102	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1553122)							
EM1805822-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.3	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1552261)							
EM1805842-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	60.8	58	114
EK040T: Fluoride Total (QCLot: 1551972)							
EM1805838-001	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	89.8	70	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1551881)							
EM1805838-001	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	54.5	50	138

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 Work Order : EM1805857
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1551881) - continued							
EM1805838-001	Anonymous	EP074-UT: Toluene	108-88-3	2 mg/kg	# 47.3	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1551881)							
EM1805838-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	64.0	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	65.2	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	38.0	28	134
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1551881)							
EM1805838-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	66.6	43	111
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1551881)							
EM1805838-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	62.9	42	106

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1805857	Page	: 1 of 8
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 23-Mar-2018
Site	: ----	Issue Date	: 11-Apr-2018
Sampler	: ----	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

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 Work Order : EM1805857
 Client : GHD PTY LTD
 Project : 31350060910



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP074A: Monocyclic Aromatic Hydrocarbons	EM1805838--001	Anonymous	Toluene	108-88-3	47.3 %	56-134%	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA001: pH in soil using 0.01M CaCl extract						
Soil Glass Jar - Unpreserved NEL-BH151_1.5m	09-Apr-2018	30-Mar-2018	10	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons						
Soil Glass Jar - Unpreserved NEL-BH151_1.5m	06-Apr-2018	30-Mar-2018	7	09-Apr-2018	30-Mar-2018	10
EP074H: Naphthalene						
Soil Glass Jar - Unpreserved NEL-BH151_1.5m	06-Apr-2018	30-Mar-2018	7	09-Apr-2018	30-Mar-2018	10
EP074I: Volatile Halogenated Compounds						
Soil Glass Jar - Unpreserved NEL-BH151_1.5m	06-Apr-2018	30-Mar-2018	7	09-Apr-2018	30-Mar-2018	10
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved NEL-BH151_1.5m	06-Apr-2018	30-Mar-2018	7	09-Apr-2018	30-Mar-2018	10
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Soil Glass Jar - Unpreserved NEL-BH151_1.5m	06-Apr-2018	30-Mar-2018	7	09-Apr-2018	30-Mar-2018	10

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
PCB - VIC EPA 448.3 Screen	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Evaluation	Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction			Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH151_1.5m	23-Mar-2018	09-Apr-2018	30-Mar-2018	✖	09-Apr-2018	09-Apr-2018	✓	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH151_1.5m	23-Mar-2018	----	----	----	06-Apr-2018	06-Apr-2018	✓	
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH151_1.5m	23-Mar-2018	09-Apr-2018	19-Sep-2018	✓	09-Apr-2018	19-Sep-2018	✓	
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH151_1.5m	23-Mar-2018	09-Apr-2018	20-Apr-2018	✓	10-Apr-2018	20-Apr-2018	✓	
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH151_1.5m	23-Mar-2018	09-Apr-2018	20-Apr-2018	✓	09-Apr-2018	16-Apr-2018	✓	
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	06-Apr-2018	✓	09-Apr-2018	20-Apr-2018	✓	
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH151_1.5m	23-Mar-2018	09-Apr-2018	20-Apr-2018	✓	10-Apr-2018	20-Apr-2018	✓	
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	06-Apr-2018	✓	09-Apr-2018	16-May-2018	✓	
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	30-Mar-2018	✖	09-Apr-2018	30-Mar-2018	✖	
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	30-Mar-2018	✖	09-Apr-2018	30-Mar-2018	✖	
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	30-Mar-2018	✖	09-Apr-2018	30-Mar-2018	✖	



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	06-Apr-2018	✓	09-Apr-2018	16-May-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	06-Apr-2018	✓	09-Apr-2018	16-May-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	06-Apr-2018	✓	09-Apr-2018	16-May-2018	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	06-Apr-2018	✓	09-Apr-2018	16-May-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	06-Apr-2018	✓	09-Apr-2018	16-May-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	30-Mar-2018	✗	09-Apr-2018	30-Mar-2018	✗
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	06-Apr-2018	✓	09-Apr-2018	16-May-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH151_1.5m	23-Mar-2018	06-Apr-2018	30-Mar-2018	✗	09-Apr-2018	30-Mar-2018	✗



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	7	28.57	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard

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 Work Order : EM1805857
 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CERTIFICATE OF ANALYSIS

Work Order	: EM1805929	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 09-Apr-2018 16:35
Order number	: ----	Date Analysis Commenced	: 11-Apr-2018
C-O-C number	: ----	Issue Date	: 16-Apr-2018 15:42
Sampler	: ----		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 11		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EK040P: EM1805935 #1 Poor matrix spike precision for Fluoride by PC titrator due to sample matrix effects. Confirmed by re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH179_0.1m	NEL-BH179_1.5m	QC1002	----	----
Client sampling date / time					09-Apr-2018 00:00	09-Apr-2018 00:00	09-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1805929-001	EM1805929-004	EM1805929-012	-----	-----
					Result	Result	Result	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		4.6	5.4	5.2	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		19.9	23.4	27.7	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Copper	7440-50-8	5	mg/kg		14	13	11	----	----
Lead	7439-92-1	5	mg/kg		25	10	9	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg		22	13	11	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	----	----
Zinc	7440-66-6	5	mg/kg		44	17	14	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		1	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		480	370	390	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH179_0.1m	NEL-BH179_1.5m	QC1002	----	----
Client sampling date / time					09-Apr-2018 00:00	09-Apr-2018 00:00	09-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1805929-001	EM1805929-004	EM1805929-012	-----	-----
					Result	Result	Result	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH179_0.1m	NEL-BH179_1.5m	QC1002	----	----
Client sampling date / time					09-Apr-2018 00:00	09-Apr-2018 00:00	09-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1805929-001	EM1805929-004	EM1805929-012	-----	-----
					Result	Result	Result	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH179_0.1m	NEL-BH179_1.5m	QC1002	----	----
Client sampling date / time				09-Apr-2018 00:00	09-Apr-2018 00:00	09-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1805929-001	EM1805929-004	EM1805929-012	-----	-----
				Result	Result	Result	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg	200	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	160	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	360	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	70	<50	<50	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH179_0.1m	NEL-BH179_1.5m	QC1002	----	----
Client sampling date / time					09-Apr-2018 00:00	09-Apr-2018 00:00	09-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1805929-001	EM1805929-004	EM1805929-012	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		270	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		340	<50	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		70	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		93.9	91.1	94.3	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		89.5	77.1	82.0	----	----
Toluene-D8	2037-26-5	0.1	%		77.7	67.7	72.8	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		85.8	74.9	84.3	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		70.8	60.4	65.3	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		73.8	69.0	71.0	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		62.2	52.5	63.7	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		104	89.1	104	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		90.6	71.1	96.7	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		89.5	73.2	84.9	----	----
Anthracene-d10	1719-06-8	0.025	%		99.8	100	96.8	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		137	134	130	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB106	RB106	----	----	----
Client sampling date / time				09-Apr-2018 00:00	09-Apr-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1805929-010	EM1805929-011	-----	-----	-----
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.87	7.98	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB106	RB106	----	----	----
Client sampling date / time					09-Apr-2018 00:00	09-Apr-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1805929-010	EM1805929-011	-----	-----	-----
					Result	Result	----	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB106	RB106	----	----	----
Client sampling date / time				09-Apr-2018 00:00	09-Apr-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1805929-010	EM1805929-011	-----	-----	-----
				Result	Result	----	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB106	RB106	----	----	----
Client sampling date / time					09-Apr-2018 00:00	09-Apr-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1805929-010	EM1805929-011	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	----	----	----
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		106	84.2	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		101	97.6	----	----	----
Toluene-D8	2037-26-5	5	%		94.2	85.0	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		100	93.6	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		29.2	34.3	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		73.6	71.8	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		67.4	59.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		72.1	69.2	----	----	----
Anthracene-d10	1719-06-8	1.0	%		89.6	81.2	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		109	92.5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB106	RB106	----	----	----
Client sampling date / time					09-Apr-2018 00:00	09-Apr-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1805929-010	EM1805929-011	-----	-----	-----
					Result	Result	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		27.0	25.6	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		78.4	78.4	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		76.0	79.5	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		106	101	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		99.3	95.0	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		96.5	92.6	----	----	----
Anthracene-d10	1719-06-8	0.25	%		101	97.8	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		93.5	108	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		99.4	95.4	----	----	----
Toluene-D8	2037-26-5	2	%		92.0	83.1	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		111	105	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

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Environmental Division
Melbourne
Work Order Reference
EM1805929



Telephone : + 61-3-8549 9600

Sampled by:		Date/Time:		Relinquished by:		Date/Time:	
Received by:	Scott (AUS)	Date/Time:	9/4/18, 16.35.	Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:		Date/Time:					
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

Shirley LeCornu

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Tuesday, 10 April 2018 9:33 PM
To: Shirley LeCornu
Cc: David Quinn; Menon, Venesa
Subject: RE: On Hold - EM1805929 - GHDSER (31350060910)

Hi Shirley,

Please analyse:

1. NEL-BH179_0.1m = IWRG621
2. NEL-BH179_1.5m = IWRG621
3. QC1002 = IWRG621
4. QC2002 = IWRG621 (triplicate - forward to Eurofins)
6. RB106 = IWRG621 water equivalent
7. TB106 = Volatile TPH/BTEX
8. FB106 = IWRG621 water equivalent

Analysis for NEL-BH150 not required.

At standard TAT. Thanks.

Nazuha Rosli
Senior Environmental Engineer
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From: Shirley LeCornu [mailto:shirley.lecornu@alsglobal.com]
Sent: Tuesday, 10 April 2018 8:03 AM
To: Rosli, Nazuha
Cc: David Quinn
Subject: FW: On Hold - EM1805929 - GHDSER (31350060910)

Hi Nazuha

Please let me know the analysis required for the attached COC.

Thanks

Shirley

Shirley LeCornu
Client Services Officer – Springvale
Environmental



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2-4 Westall Rd
Springvale Vic 3171

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1805929

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : North East Link</p> <p>Sampler :</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 4</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

Date Samples Received : 09-Apr-2018 16:35	Issue Date : 11-Apr-2018
Client Requested Due Date : 18-Apr-2018	Scheduled Reporting Date : 18-Apr-2018

Delivery Details

Mode of Delivery : Carrier	Security Seal : Intact.
No. of coolers/boxes : 1	Temperature : 9.6°C - Ice present
Receipt Detail :	No. of samples received / analysed : 11 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
FB106	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB106	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
FB106	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB106	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
FB106	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB106	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1805929-001	09-Apr-2018 00:00	NEL-BH179_0.1m		✓	✓
EM1805929-002	09-Apr-2018 00:00	NEL-BH179_0.5m	✓		
EM1805929-003	09-Apr-2018 00:00	NEL-BH179_1.0m	✓		
EM1805929-004	09-Apr-2018 00:00	NEL-BH179_1.5m		✓	✓
EM1805929-005	09-Apr-2018 00:00	NEL-BH150_0.1m	✓		
EM1805929-006	09-Apr-2018 00:00	NEL-BH150_0.5m	✓		
EM1805929-007	09-Apr-2018 00:00	NEL-BH150_1.0m	✓		
EM1805929-008	09-Apr-2018 00:00	NEL-BH150_1.5m	✓		
EM1805929-012	09-Apr-2018 00:00	QC1002		✓	✓



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	
EM1805929-010	09-Apr-2018 00:00	FB106	✓
EM1805929-011	09-Apr-2018 00:00	RB106	✓

WATER - 448.3 Water
VIC EPA IWRG621 - Water Equivalent Suite

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator							
FB106	Clear Plastic Bottle - Natural	----	09-Apr-2018	09-Apr-2018	✔	10-Apr-2018	✘
RB106	Clear Plastic Bottle - Natural	----	09-Apr-2018	09-Apr-2018	✔	10-Apr-2018	✘

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1805929	Page	: 1 of 18
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 09-Apr-2018
Order number	: ----	Date Analysis Commenced	: 11-Apr-2018
C-O-C number	: ----	Issue Date	: 16-Apr-2018
Sampler	: ----		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 11		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1561401)									
EM1805839-013	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.8	7.9	1.27	0% - 20%
EM1805940-007	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	11.3	11.4	0.881	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1559485)									
EM1805060-005	Anonymous	EA055: Moisture Content	----	0.1	%	5.4	4.9	9.32	No Limit
EM1805929-001	NEL-BH179_0.1m	EA055: Moisture Content	----	0.1	%	19.9	20.7	3.98	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1559405)									
EM1805929-001	NEL-BH179_0.1m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	22	24	10.1	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	14	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	25	22	9.77	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	44	41	7.26	No Limit
EM1806017-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	5	82.4	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	12	24.3	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1559405) - continued									
EM1806017-004	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	26	30	14.9	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1559406)									
EM1805929-001	NEL-BH179_0.1m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1806017-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1561398)									
EM1805839-013	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1806034-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1559393)									
EM1805839-013	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1805765-002	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	7	7	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1559096)									
EM1805839-013	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	370	360	3.30	No Limit
EM1806017-006	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	260	270	4.21	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1559069)									
EM1805839-013	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1559062)									
EM1805839-008	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1805940-061	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1559062)									
EM1805839-008	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1805940-061	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1559062)									
EM1805839-008	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1559062) - continued									
EM1805839-008	Anonymous	EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1805940-061	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1559068)							
EM1805839-013	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1559068) - continued									
EM1805839-013	Anonymous	EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1559068)									
EM1805839-013	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1559068)									
EM1805839-013	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	1.1	<0.5	72.4	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	0.8	<0.5	50.3	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	7.6	# 2.7	94.8	0% - 50%
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	2.7	1.0	95.9	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	8.1	# 2.5	104	0% - 50%
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	8.3	# 2.6	106	0% - 50%
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	5.0	# 1.5	106	0% - 50%
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	4.3	1.2	110	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	4.0	1.2	109	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	2.8	0.8	109	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	1.3	<0.5	90.6	No Limit
		EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	1.9	0.5	115	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1559068)									
EM1805839-013	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1559068) - continued									
EM1805839-013	Anonymous	EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1559062)									
EM1805839-008	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1805940-061	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1559067)									
EM1805992-003	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	180	180	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	60	70	0.00	No Limit
EM1805839-013	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	200	<100	65.8	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1559062)									
EM1805839-008	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1805940-061	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1559067)									
EM1805992-003	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	130	130	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	100	110	0.00	No Limit
EM1805839-013	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	270	100	91.3	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1561264)									

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1561264) - continued									
EM1806009-007	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.71	6.15	7.42	0% - 20%
EM1805935-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.59	6.58	0.152	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1561308)									
EM1806008-008	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EM1805929-010	FB106	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1561310)									
EM1806001-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.011	0.012	0.00	0% - 50%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.038	0.039	3.84	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1805929-010	FB106	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1561309)									
EM1806001-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1805929-010	FB106	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1559465)									
EM1805799-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	0.01	0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1562018)									
EM1805914-004	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1805950-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.012	0.010	17.6	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1561265)									
EM1806001-020	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1805935-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1561120)									
EM1806020-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1806020-007	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1561120)									



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1561120) - continued									
EM1806020-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1806020-007	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1561120)									
EM1806020-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1806020-007	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1561120)									
EM1806020-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1806020-007	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit

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 Work Order : EM1805929
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1561119)									
EM1806020-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1806020-007	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1561119)									
EM1806020-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1806020-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1561119)									
EM1806020-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1806020-007	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1559405)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.3	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	101	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	85.3	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	85.8	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	88.6	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	105	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.3	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	88.4	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1559406)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	79.0	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1561398)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	76.3	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1559393)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	99.8	80	110
EK040T: Fluoride Total (QCLot: 1559096)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	98.2	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1559069)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	90.2	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1559062)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	92.6	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	98.4	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	90.4	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	90.3	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	87.8	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	89.8	74	114
EP074H: Naphthalene (QCLot: 1559062)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	93.7	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1559062)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	95.4	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	82.9	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1559062) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	96.4	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	91.3	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	91.4	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	91.3	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	92.1	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	91.5	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	91.4	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	89.9	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	93.6	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	98.5	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	88.3	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	91.7	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	101	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	92.8	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	93.9	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	84.7	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1559068)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	76.2	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	62.7	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	75.7	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	74.1	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	69.5	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	62.6	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	65.0	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	72.8	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	54.6	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1559068)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	58.2	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	87.1	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	76.6	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	57.2	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	83.0	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	88.3	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	60.9	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	67.4	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	68.4	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	76.5	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1559068)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	101	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	106	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	100	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	105	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	106	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	71.7	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	104	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	105	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	100	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	107	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	127	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	113	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	97.9	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	95.6	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	98.3	55	137
EP075I: Organochlorine Pesticides (QCLot: 1559068)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	92.3	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	96.0	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	94.4	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	90.5	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	92.7	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	84.4	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	110	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	104	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	107	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	106	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	107	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	103	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	121	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	151	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	93.5	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	108	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	98.4	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	95.9	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	107	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	110	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1559062)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	95.2	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1561308)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	97.6	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1561310)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.4	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	85.4	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	84.6	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	86.1	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	92.6	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	85.4	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	86.5	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	91.2	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.0	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1561309)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	114	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1559465)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	98.2	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1562018)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	98.5	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1561265)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1559287)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	92.1	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1561120)								



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1561120) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	100	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1561120)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	110	64	139
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	110	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	112	81	144
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	108	73	121
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	107	78	120
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	109	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	104	66	119
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	106	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	109	70	120
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	99.2	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	107	75	119
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	90.8	75	112
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	101	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	118	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1561120)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	111	82	114
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	113	76	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	107	82	112
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	116	62	119
EP074G: Trihalomethanes (QCLot: 1561120)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	108	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1559288)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	91.8	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	92.4	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	88.0	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	83.1	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	106	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	106	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	104	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	104	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	103	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	107	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	104	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	103	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	106	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1559288) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	106	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	104	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	107	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1559290)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	81.8	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	81.3	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	87.4	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	79.0	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	90.1	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	80.6	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	95.8	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	95.3	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	102	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1559290)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	32.2	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	80.6	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	68.0	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	82.7	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	99.8	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	122	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	34.7	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	106	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	122	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	98.7	32	135
EP075I: Organochlorine Pesticides (QCLot: 1559290)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	111	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	74.4	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	71.3	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	82.9	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	81.5	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	82.7	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	77.1	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	76.6	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	95.0	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1559289)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	3368 µg/L	125	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	14735 µg/L	122	60	133



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1561398) - continued							
EM1805919-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	87.1	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1559393)							
EM1805765-003	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	102	77	113
EK040T: Fluoride Total (QCLot: 1559096)							
EM1805915-001	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1559069)							
EM1805915-007	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	95.8	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1559062)							
EM1805839-013	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	95.6	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	95.6	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1559062)							
EM1805839-013	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	84.9	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	86.7	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	85.3	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1559068)							
EM1805915-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	101	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	73.1	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	20.0	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1559068)							
EM1805915-001	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	60.0	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	69.8	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1559068)							
EM1805915-001	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	99.0	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	110	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1559062)							
EM1805839-013	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	72.4	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1559067)							
EM1805839-037	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	96.6	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	102	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	94.8	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1559062)							
EM1805839-013	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	68.7	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1559067)							
EM1805839-037	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	99.8	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	99.1	67	121

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 Work Order : EM1805929
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1559067) - continued							
EM1805839-037	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	94.4	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1561310)							
EM1805929-010	FB106	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	92.1	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	87.0	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	91.5	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.7	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	90.7	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	96.3	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1561309)							
EM1805929-011	RB106	EG035F: Mercury	7439-97-6	0.01 mg/L	115	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1559465)							
EM1805929-010	FB106	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	93.8	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1562018)							
EM1805914-009	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	92.6	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1561265)							
EM1805935-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	# 22.9	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1561120)							
EM1806020-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	68.2	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	72.1	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1561120)							
EM1806020-002	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	83.5	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1561119)							
EM1806020-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	64.2	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1561119)							
EM1806020-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	62.4	44	122
EP080: BTEXN (QCLot: 1561119)							
EM1806020-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	88.5	68	130
		EP080: Toluene	108-88-3	20 µg/L	88.6	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1805929**

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Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Project : **31350060910**
Site : **North East Link**
Sampler : ----
Order number : ----

Laboratory : Environmental Division Melbourne
Telephone : +61-3-8549 9630
Date Samples Received : 09-Apr-2018
Issue Date : 16-Apr-2018
No. of samples received : 11
No. of samples analysed : 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- Duplicate outliers exist - please see following pages for full details.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP075B: Polynuclear Aromatic Hydrocarbons	EM1805839--013	Anonymous	Phenanthrene	85-01-8	94.8 %	0% - 50%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1805839--013	Anonymous	Fluoranthene	206-44-0	104 %	0% - 50%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1805839--013	Anonymous	Pyrene	129-00-0	106 %	0% - 50%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1805839--013	Anonymous	Benz(a)anthracene	56-55-3	106 %	0% - 50%	RPD exceeds LOR based limits

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK040P: Fluoride by PC Titrator	EM1805935--001	Anonymous	Fluoride	16984-48-8	22.9 %	70-130%	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural FB106,	RB106	----	----	----	12-Apr-2018	09-Apr-2018	3

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	12-Apr-2018	16-Apr-2018	✓	12-Apr-2018	12-Apr-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	----	----	----	11-Apr-2018	23-Apr-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	06-Oct-2018	✓	11-Apr-2018	06-Oct-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	07-May-2018	✓	12-Apr-2018	07-May-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	12-Apr-2018	07-May-2018	✓	12-Apr-2018	19-Apr-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	23-Apr-2018	✓	12-Apr-2018	25-Apr-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	07-May-2018	✓	12-Apr-2018	07-May-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	23-Apr-2018	✓	12-Apr-2018	21-May-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	16-Apr-2018	✓	12-Apr-2018	16-Apr-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	16-Apr-2018	✓	12-Apr-2018	16-Apr-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	16-Apr-2018	✓	12-Apr-2018	16-Apr-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	23-Apr-2018	✓	12-Apr-2018	21-May-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	23-Apr-2018	✓	12-Apr-2018	21-May-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	23-Apr-2018	✓	12-Apr-2018	21-May-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	23-Apr-2018	✓	12-Apr-2018	21-May-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	16-Apr-2018	✓	12-Apr-2018	16-Apr-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH179_0.1m, QC1002	NEL-BH179_1.5m,	09-Apr-2018	11-Apr-2018	16-Apr-2018	✓	12-Apr-2018	16-Apr-2018	✓

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
FB106,	RB106	09-Apr-2018	----	----	----	12-Apr-2018	09-Apr-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)								
FB106,	RB106	09-Apr-2018	----	----	----	12-Apr-2018	06-Oct-2018	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)								
FB106,	RB106	09-Apr-2018	----	----	----	12-Apr-2018	23-Apr-2018	✔
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)								
FB106,	RB106	09-Apr-2018	----	----	----	11-Apr-2018	07-May-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF)								
FB106,	RB106	09-Apr-2018	----	----	----	12-Apr-2018	23-Apr-2018	✔
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)								
FB106,	RB106	09-Apr-2018	----	----	----	12-Apr-2018	07-May-2018	✔
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)								
FB106,	RB106	09-Apr-2018	11-Apr-2018	16-Apr-2018	✔	13-Apr-2018	21-May-2018	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB106,	RB106	09-Apr-2018	12-Apr-2018	23-Apr-2018	✔	12-Apr-2018	23-Apr-2018	✔
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB106,	RB106	09-Apr-2018	12-Apr-2018	23-Apr-2018	✔	12-Apr-2018	23-Apr-2018	✔
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB106,	RB106	09-Apr-2018	12-Apr-2018	23-Apr-2018	✔	12-Apr-2018	23-Apr-2018	✔
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB106,	RB106	09-Apr-2018	12-Apr-2018	23-Apr-2018	✔	12-Apr-2018	23-Apr-2018	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
FB106,	RB106	09-Apr-2018	11-Apr-2018	16-Apr-2018	✔	13-Apr-2018	21-May-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)								
FB106,	RB106	09-Apr-2018	11-Apr-2018	16-Apr-2018	✔	13-Apr-2018	21-May-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB106, RB106	09-Apr-2018	11-Apr-2018	16-Apr-2018	✓	13-Apr-2018	21-May-2018	✓	
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) FB106, RB106	09-Apr-2018	11-Apr-2018	16-Apr-2018	✓	13-Apr-2018	21-May-2018	✓	
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) FB106, RB106	09-Apr-2018	11-Apr-2018	16-Apr-2018	✓	13-Apr-2018	21-May-2018	✓	
Amber VOC Vial - Sulfuric Acid (EP080) FB106, RB106	09-Apr-2018	12-Apr-2018	23-Apr-2018	✓	12-Apr-2018	23-Apr-2018	✓	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) FB106, RB106	09-Apr-2018	11-Apr-2018	16-Apr-2018	✓	13-Apr-2018	21-May-2018	✓	
Amber VOC Vial - Sulfuric Acid (EP080) FB106, RB106	09-Apr-2018	12-Apr-2018	23-Apr-2018	✓	12-Apr-2018	23-Apr-2018	✓	
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) FB106, RB106	09-Apr-2018	12-Apr-2018	23-Apr-2018	✓	12-Apr-2018	23-Apr-2018	✓	



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	9	22.22	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Certificate of Analysis

GHD Melbourne
Level 8, 180 Lonsdale St
Melbourne
VIC 3000



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: David Quinn

Report 593673-S
Project name NORTH EAST LINK - CONTAMINATION
Project ID 31/35006/0910
Received Date Apr 13, 2018

Client Sample ID			QC2002
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ap13261
Date Sampled			Apr 09, 2018
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
Volatile Organics			
1.1-Dichloroethane	0.5	mg/kg	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5
Allyl chloride	0.5	mg/kg	< 0.5
Benzene	0.1	mg/kg	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5
Bromochloromethane	0.5	mg/kg	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5
Bromoform	0.5	mg/kg	< 0.5
Bromomethane	0.5	mg/kg	< 0.5

Client Sample ID			QC2002
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ap13261
Date Sampled			Apr 09, 2018
Test/Reference	LOR	Unit	
Volatile Organics			
Carbon disulfide	0.5	mg/kg	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5
Chloroethane	0.5	mg/kg	< 0.5
Chloroform	0.5	mg/kg	< 0.5
Chloromethane	0.5	mg/kg	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1
Iodomethane	0.5	mg/kg	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5
o-Xylene	0.1	mg/kg	< 0.1
Styrene	0.5	mg/kg	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5
Toluene	0.1	mg/kg	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5
Xylenes - Total	0.3	mg/kg	< 0.3
Total MAH*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5
4-Bromofluorobenzene (surr.)	1	%	71
Toluene-d8 (surr.)	1	%	58
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5

Client Sample ID			QC2002
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ap13261
Date Sampled			Apr 09, 2018
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	85
p-Terphenyl-d14 (surr.)	1	%	120
Organochlorine Pesticides			
Chlordanes - Total	0.1	mg/kg	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05
a-BHC	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-BHC	0.05	mg/kg	< 0.05
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05
Toxaphene	1	mg/kg	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	149
Tetrachloro-m-xylene (surr.)	1	%	138
Polychlorinated Biphenyls			
Aroclor-1016	0.1	mg/kg	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1

Client Sample ID			QC2002
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ap13261
Date Sampled			Apr 09, 2018
Test/Reference	LOR	Unit	
Polychlorinated Biphenyls			
Total PCB*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	149
Tetrachloro-m-xylene (surr.)	1	%	138
Phenols (Halogenated)			
2-Chlorophenol	0.5	mg/kg	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	< 1
2,4,6-Trichlorophenol	1.0	mg/kg	< 1
2,6-Dichlorophenol	0.5	mg/kg	< 0.5
4-Chloro-3-methylphenol	1.0	mg/kg	< 1
Pentachlorophenol	1.0	mg/kg	< 1
Tetrachlorophenols - Total	1.0	mg/kg	< 1
Total Halogenated Phenol*	1	mg/kg	< 1
Phenols (non-Halogenated)			
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	< 20
2-Methyl-4,6-dinitrophenol	5	mg/kg	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2
2-Nitrophenol	1.0	mg/kg	< 1
2,4-Dimethylphenol	0.5	mg/kg	< 0.5
2,4-Dinitrophenol	5	mg/kg	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4
4-Nitrophenol	5	mg/kg	< 5
Dinoseb	20	mg/kg	< 20
Phenol	0.5	mg/kg	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20
Phenol-d6 (surr.)	1	%	84
Chromium (hexavalent)	1	mg/kg	< 1
Cyanide (total)	5	mg/kg	< 5
Fluoride	100	mg/kg	510
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	8.1
% Moisture	1	%	25
Heavy Metals			
Arsenic	2	mg/kg	4.1
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	43
Copper	5	mg/kg	15
Lead	5	mg/kg	16
Mercury	0.1	mg/kg	< 0.1
Molybdenum	5	mg/kg	< 5
Nickel	5	mg/kg	20
Selenium	2	mg/kg	< 2
Silver	0.2	mg/kg	< 0.2
Tin	10	mg/kg	< 10
Zinc	5	mg/kg	26

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Vic EPA IWRG 621 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Apr 17, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
Volatile Organics	Melbourne	Apr 17, 2018	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 17, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 17, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Apr 17, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	Apr 17, 2018	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Melbourne	Apr 17, 2018	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Phenols (Halogenated)	Melbourne	Apr 17, 2018	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Apr 17, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Chromium (hexavalent)	Melbourne	Apr 17, 2018	28 Day
- Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)			
Cyanide (total)	Melbourne	Apr 17, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride	Melbourne	Apr 18, 2018	28 Day
- Method: LTM-INO-4150 Determination of Total Fluoride PART A – CIC			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	Apr 17, 2018	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
IWRG 621 Metals : Metals M12	Melbourne	Apr 17, 2018	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	Apr 17, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name: GHD Pty Ltd VIC
Address: Level 8, 180 Lonsdale St
Melbourne
VIC 3000

Project Name: NORTH EAST LINK - CONTAMINATION
Project ID: 31/35006/0910

Order No.:
Report #: 593673
Phone: 8687 8000
Fax: 8687 8111

Received: Apr 13, 2018 2:10 PM
Due: Apr 20, 2018
Priority: 5 Day
Contact Name: David Quinn

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
1	QC2002	Apr 09, 2018		Soil	M18-Ap13261	X
Test Counts						1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5			0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5			0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5			0.5	Pass	
Allyl chloride	mg/kg	< 0.5			0.5	Pass	
Benzene	mg/kg	< 0.1			0.1	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromochloromethane	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dibromomethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
trans-1,2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1,3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4,5-Trichlorophenol	mg/kg	< 1			1	Pass	
2,4,6-Trichlorophenol	mg/kg	< 1			1.0	Pass	
2,6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1.0	Pass	
Pentachlorophenol	mg/kg	< 1			1.0	Pass	
Tetrachlorophenols - Total	mg/kg	< 1			1.0	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4,6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2,4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Fluoride	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Molybdenum	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 0.2			0.2	Pass	
Tin	mg/kg	< 10			10	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	107			70-130	Pass	
TRH C10-C14	%	83			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	75			70-130	Pass	
1.1.1-Trichloroethane	%	85			70-130	Pass	
1.2-Dichlorobenzene	%	98			70-130	Pass	
1.2-Dichloroethane	%	115			70-130	Pass	
Benzene	%	88			70-130	Pass	
Ethylbenzene	%	99			70-130	Pass	
m&p-Xylenes	%	92			70-130	Pass	
Toluene	%	90			70-130	Pass	
Trichloroethene	%	86			70-130	Pass	
Xylenes - Total	%	94			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	85			70-130	Pass	
TRH C6-C10	%	102			70-130	Pass	
TRH >C10-C16	%	78			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	90			70-130	Pass	
Acenaphthylene	%	70			70-130	Pass	
Anthracene	%	86			70-130	Pass	
Benz(a)anthracene	%	84			70-130	Pass	
Benzo(a)pyrene	%	83			70-130	Pass	
Benzo(b&j)fluoranthene	%	106			70-130	Pass	
Benzo(g,h,i)perylene	%	83			70-130	Pass	
Benzo(k)fluoranthene	%	130			70-130	Pass	
Chrysene	%	73			70-130	Pass	
Dibenz(a,h)anthracene	%	72			70-130	Pass	
Fluoranthene	%	94			70-130	Pass	
Fluorene	%	71			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	77			70-130	Pass	
Naphthalene	%	71			70-130	Pass	
Phenanthrene	%	72			70-130	Pass	
Pyrene	%	93			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	106			70-130	Pass	
4,4'-DDE	%	109			70-130	Pass	
4,4'-DDT	%	106			70-130	Pass	
a-BHC	%	105			70-130	Pass	
Aldrin	%	115			70-130	Pass	
b-BHC	%	100			70-130	Pass	
d-BHC	%	102			70-130	Pass	
Dieldrin	%	108			70-130	Pass	
Endosulfan I	%	111			70-130	Pass	
Endosulfan II	%	107			70-130	Pass	
Endosulfan sulphate	%	106			70-130	Pass	
Endrin	%	97			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	%	108			70-130	Pass	
Endrin ketone	%	116			70-130	Pass	
g-BHC (Lindane)	%	105			70-130	Pass	
Heptachlor	%	110			70-130	Pass	
Heptachlor epoxide	%	106			70-130	Pass	
Hexachlorobenzene	%	100			70-130	Pass	
Methoxychlor	%	129			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	83			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	67			30-130	Pass	
2,4-Dichlorophenol	%	62			30-130	Pass	
2,4,5-Trichlorophenol	%	62			30-130	Pass	
2,4,6-Trichlorophenol	%	60			30-130	Pass	
2,6-Dichlorophenol	%	68			30-130	Pass	
4-Chloro-3-methylphenol	%	69			30-130	Pass	
Pentachlorophenol	%	66			30-130	Pass	
Tetrachlorophenols - Total	%	61			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	%	42			30-130	Pass	
2-Methyl-4,6-dinitrophenol	%	38			30-130	Pass	
2-Methylphenol (o-Cresol)	%	71			30-130	Pass	
2-Nitrophenol	%	64			30-130	Pass	
2,4-Dimethylphenol	%	62			30-130	Pass	
2,4-Dinitrophenol	%	43			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	65			30-130	Pass	
4-Nitrophenol	%	46			30-130	Pass	
Dinoseb	%	41			30-130	Pass	
Phenol	%	65			30-130	Pass	
LCS - % Recovery							
Chromium (hexavalent)	%	87			70-130	Pass	
Cyanide (total)	%	101			70-130	Pass	
Fluoride	%	106			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	112			80-120	Pass	
Cadmium	%	102			80-120	Pass	
Chromium	%	120			80-120	Pass	
Copper	%	117			80-120	Pass	
Lead	%	113			80-120	Pass	
Mercury	%	118			75-125	Pass	
Molybdenum	%	109			80-120	Pass	
Nickel	%	117			80-120	Pass	
Selenium	%	109			80-120	Pass	
Silver	%	112			80-120	Pass	
Tin	%	102			80-120	Pass	
Zinc	%	116			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M18-Ap17450	NCP	%	80		70-130	Pass	
TRH C10-C14	B18-Ap20324	NCP	%	78		70-130	Pass	
Spike - % Recovery								
Volatile Organics				Result 1				
1.1-Dichloroethene	M18-Ap17450	NCP	%	82		70-130	Pass	
1.1.1-Trichloroethane	M18-Ap17450	NCP	%	82		70-130	Pass	
1.2-Dichlorobenzene	M18-Ap17450	NCP	%	97		70-130	Pass	
1.2-Dichloroethane	M18-Ap17450	NCP	%	97		70-130	Pass	
Benzene	M18-Ap17450	NCP	%	96		70-130	Pass	
Ethylbenzene	M18-Ap17450	NCP	%	79		70-130	Pass	
m&p-Xylenes	M18-Ap17450	NCP	%	80		70-130	Pass	
o-Xylene	M18-Ap17450	NCP	%	79		70-130	Pass	
Toluene	M18-Ap17450	NCP	%	99		70-130	Pass	
Trichloroethene	M18-Ap17450	NCP	%	85		70-130	Pass	
Xylenes - Total	M18-Ap17450	NCP	%	80		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M18-Ap17450	NCP	%	78		70-130	Pass	
TRH C6-C10	M18-Ap17450	NCP	%	77		70-130	Pass	
TRH >C10-C16	B18-Ap20324	NCP	%	76		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M18-Ap15962	NCP	%	106		70-130	Pass	
Acenaphthylene	M18-Ap15962	NCP	%	109		70-130	Pass	
Anthracene	M18-Ap15962	NCP	%	106		70-130	Pass	
Benz(a)anthracene	M18-Ap15962	NCP	%	99		70-130	Pass	
Benzo(a)pyrene	M18-Ap15962	NCP	%	107		70-130	Pass	
Benzo(b&j)fluoranthene	M18-Ap15962	NCP	%	73		70-130	Pass	
Benzo(g,h,i)perylene	M18-Ap15962	NCP	%	76		70-130	Pass	
Benzo(k)fluoranthene	M18-Ap15962	NCP	%	112		70-130	Pass	
Chrysene	M18-Ap15962	NCP	%	118		70-130	Pass	
Dibenz(a,h)anthracene	M18-Ap15962	NCP	%	87		70-130	Pass	
Fluoranthene	M18-Ap15962	NCP	%	117		70-130	Pass	
Fluorene	M18-Ap15962	NCP	%	107		70-130	Pass	
Indeno(1,2,3-cd)pyrene	M18-Ap15962	NCP	%	83		70-130	Pass	
Naphthalene	M18-Ap15962	NCP	%	105		70-130	Pass	
Phenanthrene	M18-Ap15962	NCP	%	107		70-130	Pass	
Pyrene	M18-Ap15962	NCP	%	116		70-130	Pass	
Spike - % Recovery								
Organochlorine Pesticides				Result 1				
4,4'-DDD	M18-Ap17830	NCP	%	122		70-130	Pass	
4,4'-DDE	M18-Ap17830	NCP	%	116		70-130	Pass	
4,4'-DDT	M18-Ap17830	NCP	%	83		70-130	Pass	
a-BHC	M18-Ap17830	NCP	%	101		70-130	Pass	
Aldrin	M18-Ap17830	NCP	%	110		70-130	Pass	
b-BHC	M18-Ap17830	NCP	%	91		70-130	Pass	
d-BHC	M18-Ap17830	NCP	%	96		70-130	Pass	
Dieldrin	M18-Ap17830	NCP	%	108		70-130	Pass	
Endosulfan I	M18-Ap17830	NCP	%	111		70-130	Pass	
Endosulfan II	M18-Ap17830	NCP	%	102		70-130	Pass	
Endosulfan sulphate	M18-Ap17830	NCP	%	97		70-130	Pass	
Endrin	M18-Ap17830	NCP	%	128		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	M18-Ap17830	NCP	%	71			70-130	Pass	
Endrin ketone	M18-Ap17830	NCP	%	102			70-130	Pass	
g-BHC (Lindane)	M18-Ap17830	NCP	%	98			70-130	Pass	
Heptachlor	M18-Ap17830	NCP	%	103			70-130	Pass	
Heptachlor epoxide	M18-Ap17830	NCP	%	107			70-130	Pass	
Hexachlorobenzene	M18-Ap17830	NCP	%	101			70-130	Pass	
Methoxychlor	M18-Ap17830	NCP	%	84			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	M18-Ap12958	NCP	%	98			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chromium (hexavalent)	M18-Ap18570	NCP	%	98			70-130	Pass	
Cyanide (total)	M18-Ap15422	NCP	%	109			70-130	Pass	
Fluoride	M18-Ap15377	NCP	%	96			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-Ap14288	NCP	%	111			75-125	Pass	
Cadmium	S18-Ap14288	NCP	%	102			75-125	Pass	
Chromium	S18-Ap14288	NCP	%	112			75-125	Pass	
Copper	S18-Ap14288	NCP	%	116			75-125	Pass	
Lead	S18-Ap14288	NCP	%	121			75-125	Pass	
Mercury	S18-Ap14288	NCP	%	101			70-130	Pass	
Molybdenum	S18-Ap14288	NCP	%	111			75-125	Pass	
Nickel	S18-Ap14288	NCP	%	116			75-125	Pass	
Selenium	S18-Ap14288	NCP	%	104			75-125	Pass	
Silver	S18-Ap14288	NCP	%	107			75-125	Pass	
Tin	S18-Ap14288	NCP	%	101			75-125	Pass	
Zinc	S18-Ap14288	NCP	%	96			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M18-Ap17439	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	P18-Ap16455	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	P18-Ap16455	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	P18-Ap16455	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trichlorobenzene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobutadiene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichlorobenzene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trimethylbenzene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichlorobenzene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
1.3.5-Trimethylbenzene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.4-Dichlorobenzene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Butanone (MEK)	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Propanone (Acetone)	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chlorotoluene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Methyl-2-pentanone (MIBK)	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Allyl chloride	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzene	M18-Ap17439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Bromobenzene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromochloromethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromodichloromethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromoform	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromomethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon disulfide	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon Tetrachloride	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chlorobenzene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroform	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloromethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.2-Dichloroethene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.3-Dichloropropene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromochloromethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromomethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dichlorodifluoromethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Ethylbenzene	M18-Ap17439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Iodomethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Isopropyl benzene (Cumene)	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
m&p-Xylenes	M18-Ap17439	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methylene Chloride	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
o-Xylene	M18-Ap17439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Styrene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Tetrachloroethene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Toluene	M18-Ap17439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
trans-1.2-Dichloroethene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
trans-1.3-Dichloropropene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichloroethene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichlorofluoromethane	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Vinyl chloride	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Xylenes - Total	M18-Ap17439	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M18-Ap17439	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	M18-Ap17439	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	P18-Ap16455	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	P18-Ap16455	NCP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	P18-Ap16455	NCP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Benzo(g,h,i)perylene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	M18-Ap19585	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	M18-Ap17834	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	M18-Ap17834	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Toxaphene	M18-Ap17834	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	M18-Ap17834	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1221	M18-Ap17834	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	M18-Ap17834	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1242	M18-Ap17834	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1248	M18-Ap17834	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1254	M18-Ap12957	NCP	mg/kg	15	14	5.0	30%	Pass
Aroclor-1260	M18-Ap12957	NCP	mg/kg	12	14	15	30%	Pass
Total PCB*	M18-Ap12957	NCP	mg/kg	26	28	4	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	B18-Ap14395	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	B18-Ap14395	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	B18-Ap14395	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	B18-Ap14395	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	B18-Ap14395	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	B18-Ap14395	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	B18-Ap14395	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	B18-Ap14395	NCP	mg/kg	< 1	< 1	<1	30%	Pass

Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	B18-Ap14395	NCP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	B18-Ap14395	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	B18-Ap14395	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
2-Nitrophenol	B18-Ap14395	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	B18-Ap14395	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dinitrophenol	B18-Ap14395	NCP	mg/kg	< 5	< 5	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	B18-Ap14395	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	B18-Ap14395	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	B18-Ap14395	NCP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	B18-Ap14395	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M18-Ap15421	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Cyanide (total)	M18-Ap17834	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Fluoride	M18-Ap15372	NCP	mg/kg	< 100	< 100	<1	30%	Pass
pH (1:5 Aqueous extract at 25°C as rec.)	M18-Ap16229	NCP	pH Units	11	12	pass	30%	Pass
% Moisture	S18-Ap14064	NCP	%	17	16	10	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S18-Ap14287	NCP	mg/kg	13	12	9.0	30%	Pass
Cadmium	S18-Ap14287	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S18-Ap14287	NCP	mg/kg	20	18	10	30%	Pass
Copper	S18-Ap14287	NCP	mg/kg	22	23	4.0	30%	Pass
Lead	S18-Ap14287	NCP	mg/kg	32	32	1.0	30%	Pass
Mercury	S18-Ap14287	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Molybdenum	S18-Ap14287	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Nickel	S18-Ap14287	NCP	mg/kg	7.1	6.7	7.0	30%	Pass
Selenium	S18-Ap14287	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	S18-Ap14287	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tin	S18-Ap14287	NCP	mg/kg	< 10	< 10	<1	30%	Pass
Zinc	S18-Ap14287	NCP	mg/kg	51	50	1.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Mary Makarios	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacallis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Michael Brancati	Senior Analyst-Inorganic (VIC)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EM1806138**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **North East Link**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 23-Mar-2018 17:20
Date Analysis Commenced : 16-Apr-2018
Issue Date : 19-Apr-2018 13:42



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1805158.



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

NEL-BH150_0.1m

Client sampling date / time

23-Mar-2018 00:00

Compound

CAS Number

LOR

Unit

EM1806138-001

Result

EG005C: Leachable Metals by ICPAES

Lead	7439-92-1	0.1	mg/L	<0.1	----	----	----	----
------	-----------	-----	------	------	------	------	------	------



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH150_0.1m	----	----	----	----
				Client sampling date / time	23-Mar-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1806138-001	-----	-----	-----	-----
					Result	----	----	----	----
EN60: ASLP Leaching Procedure									
Initial pH	----	0.1	pH Unit		5.4	----	----	----	----
After HCl pH	----	0.1	pH Unit		5.4	----	----	----	----
Extraction Fluid pH	----	0.1	pH Unit		5.0	----	----	----	----
Final pH	----	0.1	pH Unit		6.8	----	----	----	----

Rebatch

Client / Client code: GHD

Project: 31350060910

Project Manger: DAVID QUINN

Date /time sample rec: 23/3 @ 5:20pm

Date/time Instructions rec: 12/4 @ 1:23pm

Due date: STD

Due date surcharge:

CS Contact:

Shirley

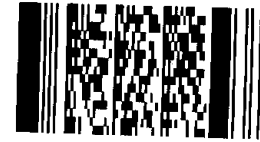
Additional Information:

Environmental Division

Melbourne

Work Order Reference

EM1806138



Telephone : + 61-3-8549 9600

MS: 1380
 π 12-4

[illegible]

Shirley LeCornu

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Thursday, 12 April 2018 1:23 PM
To: Shirley LeCornu
Cc: Menon, Venesa
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1805158 | Overall Description: North East Link - Contamination

Hi Shirley,

Can you please undertake leachability test for NEL-BH150_0.1m for lead?

At standard TAT. Thanks.

Nazuha Rosli
Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
nazuha.rosli@aecom.com

AECOM
Collins Square, Level 10, Tower Two, 727 Collins Street, Melbourne, VIC 3008
T +61 3 9653 1234 F +61 3 9654 7117
aecom.com

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From: David Quinn [<mailto:David.Quinn@ghd.com>]
Sent: Wednesday, 4 April 2018 5:28 PM
To: Rosli, Nazuha
Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1805158 | Overall Description: North East Link - Contamination

Hi Nazuha

Please see attached new results. It appears you didn't receive these.

Regards

David Quinn
Senior Environmental Engineer - Waste Management & Environmental Compliance

GHD
T: 03 8687 8627 | M: 0437 227 626 | V: 318 627 | E: david.quinn@ghd.com
Level 18, 180 Lonsdale Street, Melbourne 3000 | <http://www.ghd.com/>
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

Please consider our environment before printing this email



**GHD acknowledges the Traditional Owners of Country throughout Australia.
We pay respect to their continuing culture and Elders past, present and emerging.
[Click here](#) to learn about our Reconciliation Action Plan.**

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Wednesday, 4 April 2018 5:01 PM
To: David Quinn <David.Quinn@ghd.com>
Subject: RESULTS & EDD & INVOICE for ALS Workorder : EM1805158 | Overall Description: North East Link - Contamination

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1806138

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number :</p> <p>C-O-C number : ----</p> <p>Site : North East Link</p> <p>Sampler :</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 2</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Dates

<p>Date Samples Received : 23-Mar-2018 17:20</p> <p>Client Requested Due : 19-Apr-2018</p> <p>Date :</p>	<p>Issue Date : 12-Apr-2018</p> <p>Scheduled Reporting Date : 19-Apr-2018</p>
----------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------

Delivery Details

<p>Mode of Delivery : Samples On Hand</p> <p>No. of coolers/boxes : ----</p> <p>Receipt Detail :</p>	<p>Security Seal : Not Available</p> <p>Temperature : ----</p> <p>No. of samples received / analysed : 1 / 1</p>
------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **This is a rebatch of EM1805158.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN60a ASLP Leachate Procedure
EM1806138-001	23-Mar-2018 00:00	NEL-BH150_0.1m	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL ACCOUNTS

- A4 - AU Tax Invoice (INV)

Email ap-fss@ghd.com

DAVID QUINN

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESdat (ESRN_ESDAT)

Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com

GHD LAB REPORTS

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESdat (ESRN_ESDAT)

Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com

QUALITY CONTROL REPORT

Work Order	: EM1806138	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 23-Mar-2018
Order number	: ----	Date Analysis Commenced	: 16-Apr-2018
C-O-C number	: ----	Issue Date	: 19-Apr-2018
Sampler	: ----		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1576123)									
EM1806138-001	NEL-BH150_0.1m	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1806250-002	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1576123)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	106	88	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1576123)							
EM1806175-001	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	98.7	86	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1806138	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 23-Mar-2018
Site	: North East Link	Issue Date	: 19-Apr-2018
Sampler	: ----	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH150 0.1m	23-Mar-2018	16-Apr-2018	19-Sep-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH150 0.1m	16-Apr-2018	18-Apr-2018	13-Oct-2018	✔	18-Apr-2018	13-Oct-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1806356**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **SH + MLM**
Site : **North East Link**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **11**
No. of samples analysed : **7**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 17-Apr-2018 11:40
Date Analysis Commenced : 18-Apr-2018
Issue Date : 24-Apr-2018 15:06



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Samples were filtered through a 0.45um filter prior to the dissolved metals analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH181-0.2m	NEL-BH181-1.0m	NEL-BH182-0.2m	NEL-BH182-1.0m	----
Client sampling date / time					16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1806356-001	EM1806356-003	EM1806356-005	EM1806356-007	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.0	6.8	5.7	5.2	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.2	13.7	12.1	22.0	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		26	9	13	10	----
Lead	7439-92-1	5	mg/kg		137	10	14	9	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		35	16	28	17	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		92	36	37	29	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		340	250	280	250	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH181-0.2m	NEL-BH181-1.0m	NEL-BH182-0.2m	NEL-BH182-1.0m	----
Client sampling date / time					16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1806356-001	EM1806356-003	EM1806356-005	EM1806356-007	-----
					Result	Result	Result	Result	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH181-0.2m	NEL-BH181-1.0m	NEL-BH182-0.2m	NEL-BH182-1.0m	----
Client sampling date / time					16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1806356-001	EM1806356-003	EM1806356-005	EM1806356-007	-----
				Result	Result	Result	Result	----	

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	0.6	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	0.6	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH181-0.2m	NEL-BH181-1.0m	NEL-BH182-0.2m	NEL-BH182-1.0m	----
Client sampling date / time				16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	----
Compound	CAS Number	LOR	Unit	EM1806356-001	EM1806356-003	EM1806356-005	EM1806356-007	-----
				Result	Result	Result	Result	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH181-0.2m	NEL-BH181-1.0m	NEL-BH182-0.2m	NEL-BH182-1.0m	----
Client sampling date / time					16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1806356-001	EM1806356-003	EM1806356-005	EM1806356-007	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		76.6	70.9	68.7	84.8	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		86.4	98.2	81.4	82.7	----
Toluene-D8	2037-26-5	0.1	%		78.1	91.3	70.0	73.2	----
4-Bromofluorobenzene	460-00-4	0.1	%		79.7	101	80.8	80.4	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		109	104	97.9	103	----
2-Chlorophenol-D4	93951-73-6	0.025	%		87.7	84.4	75.9	83.4	----
2,4,6-Tribromophenol	118-79-6	0.025	%		101	95.3	87.4	88.2	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		107	103	93.2	101	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		102	99.1	90.1	94.3	----
2-Fluorobiphenyl	321-60-8	0.025	%		116	114	105	114	----
Anthracene-d10	1719-06-8	0.025	%		114	108	100	107	----
4-Terphenyl-d14	1718-51-0	0.025	%		127	118	111	117	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB107	FB107	TB107	----	----
Client sampling date / time				16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1806356-009	EM1806356-010	EM1806356-011	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.78	5.67	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB107	FB107	TB107	----	----
Client sampling date / time					16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1806356-009	EM1806356-010	EM1806356-011	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB107	FB107	TB107	----	----
Client sampling date / time				16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1806356-009	EM1806356-010	EM1806356-011	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB107	FB107	TB107	----	----
Client sampling date / time					16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1806356-009	EM1806356-010	EM1806356-011	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		108	102	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		94.8	90.9	----	----	----
Toluene-D8	2037-26-5	5	%		83.1	81.2	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		100	97.0	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		26.1	30.8	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		61.1	72.8	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		47.6	60.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		72.6	88.2	----	----	----
Anthracene-d10	1719-06-8	1.0	%		80.8	91.3	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		103	103	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB107	FB107	TB107	----	----
Client sampling date / time					16-Apr-2018 00:00	16-Apr-2018 00:00	16-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1806356-009	EM1806356-010	EM1806356-011	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		34.2	30.5	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		82.6	75.3	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		91.7	85.7	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		98.9	91.4	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		97.3	88.3	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		109	103	----	----	----
Anthracene-d10	1719-06-8	0.25	%		107	100	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		122	115	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		103	97.2	98.6	----	----
Toluene-D8	2037-26-5	2	%		84.0	82.4	88.0	----	----
4-Bromofluorobenzene	460-00-4	2	%		103	102	104	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Page 1 of 1

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format													
Project North East Link - Contamination		Contact Email David.Quinn@ghd.com		Address: 2 - 4 Westall Rd, Springvale															
GHD Contact David Quinn		Quote No./GHD Reference ME/124/18		Lab Contact: Shirley LeCornu															
Standard TAT																			
Sample ID	Date	Time	Composite Sample	Sample Matrix S - Soil W - Water A - Air G - Gas	Preservative	Type J - Soil Jar B - Bag V - Vial G - Glass bottle P - Plastic bottle	Number	Volume (mL)	HOLD	Analyses Required									
1 NEL-BH181-0.2m	16/04/18	AM	/	S	/	J	1	/	X										
2 NEL-BH181-0.5m	"	"	/	S	/	J	1	/	X										
3 NEL-BH181-1.0m	"	"	/	S	/	J	1	/	X										
4 NEL-BH181-1.5m	"	"	/	S	/	J	1	/	X										
5 NEL-BH182-0.2m	"	"	/	S	/	J	1	/	X										
6 NEL-BH182-0.5m	"	"	/	S	/	J	1	/	X										
7 NEL-BH182-1.0m	"	"	/	S	/	J	1	/	X										
8 NEL-BH182-1.5m	"	"	/	S	/	J	1	/	X										
9 RB107	"	"	/	W	/	V/GP	8	/	X										
10 FB107	"	"	/	W	/	V/GP	8	/	X										
11 TB107	"	"	/	W	/	V/GP	1	/	X										

Environmental Division
Melbourne
Work Order Reference
EM1806356



Telephone : + 61-3-8549 9600

Sampled by:	S. HILLIARD / M. Lo Monaca	Date/Time:	16/04/18 AM	Relinquished by:		Date/Time:	
Received by:		Date/Time:		Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Monica (AUS)	Date/Time:	17/4, 11:40				
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

Shirley LeCornu

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Tuesday, 17 April 2018 9:34 PM
To: Shirley LeCornu
Cc: David Quinn; Menon, Venesa
Subject: RE: CoC for ALS Workorder : EM1806356 | Overall Description: NO ANALYSIS

Hi Shirley,

Please analyse:

1. NEL-BH181_0.2m = IWRG621
2. NEL-BH181_1.0m = IWRG621
3. NEL-BH182_0.2m = IWRG621
4. NEL-BH182_1.0m = IWRG621
5. RB107 = IWRG621 water equivalent
6. TB107 = Volatile TPH/BTEX
7. FB107 = IWRG621 water equivalent

At standard TAT. Thanks.

Nazuha Rosli
Senior Environmental Engineer
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nazuha.rosli@aecom.com

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From: David Quinn [mailto:David.Quinn@ghd.com]
Sent: Tuesday, 17 April 2018 5:15 PM
To: Rosli, Nazuha; Menon, Venesa
Subject: FW: CoC for ALS Workorder : EM1806356 | Overall Description: NO ANALYSIS

Hi Nazuha

Please see attached COC BH182. Can you please follow up with the lab and advise of analysis. Thanks David.

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance

GHD
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From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Tuesday, 17 April 2018 5:11 PM
To: David Quinn <David.Quinn@ghd.com>
Subject: CoC for ALS Workorder : EM1806356 | Overall Description: NO ANALYSIS



Deliverables for ALS Workorder EM1806356

Project: 31350060910

Overall Description: NO ANALYSIS

Dear DAVID QUINN,

Please find enclosed the following deliverables for **EM1806356**:

- EM1806356_COC.pdf

Report Recipients

- DAVID QUINN
 - EM1806356_COC.pdf (Email)

www.alsglobal.com

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**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1806356**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 4
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link		
Sampler	: SH + MLM		

Dates

Date Samples Received	: 17-Apr-2018 11:40	Issue Date	: 18-Apr-2018
Client Requested Due Date	: 24-Apr-2018	Scheduled Reporting Date	: 24-Apr-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 6.3°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 11 / 7

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples to be filtered through a 0.45um filter prior to the dissolved metals analysis.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB107	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB107	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB107	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB107	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB107	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB107	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1806356-001	16-Apr-2018 00:00	NEL-BH181-0.2m		✓	✓
EM1806356-002	16-Apr-2018 00:00	NEL-BH181-0.5m	✓		
EM1806356-003	16-Apr-2018 00:00	NEL-BH181-1.0m		✓	✓
EM1806356-004	16-Apr-2018 00:00	NEL-BH181-1.5m	✓		
EM1806356-005	16-Apr-2018 00:00	NEL-BH182-0.2m		✓	✓
EM1806356-006	16-Apr-2018 00:00	NEL-BH182-0.5m	✓		
EM1806356-007	16-Apr-2018 00:00	NEL-BH182-1.0m		✓	✓
EM1806356-008	16-Apr-2018 00:00	NEL-BH182-1.5m	✓		



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1806356-009	16-Apr-2018 00:00	RB107	✓	
EM1806356-010	16-Apr-2018 00:00	FB107	✓	
EM1806356-011	16-Apr-2018 00:00	TB107		✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator							
FB107	Clear Plastic Bottle - Natural	----	16-Apr-2018	17-Apr-2018	✗	----	----
RB107	Clear Plastic Bottle - Natural	----	16-Apr-2018	17-Apr-2018	✗	----	----

ALL ACCOUNTS

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QUALITY CONTROL REPORT

Work Order	: EM1806356	Page	: 1 of 17
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 17-Apr-2018
Order number	:	Date Analysis Commenced	: 18-Apr-2018
C-O-C number	: ----	Issue Date	: 24-Apr-2018
Sampler	: SH + MLM		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 11		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1578669)									
EM1806356-001	NEL-BH181-0.2m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.0	6.9	1.44	0% - 20%
EM1806373-006	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.9	7.8	1.27	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1575759)									
EM1806356-001	NEL-BH181-0.2m	EA055: Moisture Content	----	0.1	%	12.2	12.7	4.12	0% - 50%
EM1806375-002	Anonymous	EA055: Moisture Content	----	0.1	%	5.0	5.0	0.00	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1575779)									
EM1806356-001	NEL-BH181-0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	35	36	4.34	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	26	29	9.66	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	137	137	0.00	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	92	95	2.87	0% - 50%
EM1806375-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	15	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	50	43	15.7	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1575779) - continued									
EM1806375-004	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	49	51	3.07	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1575778)									
EM1806356-001	NEL-BH181-0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1806375-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1578671)									
EM1806221-006	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1806356-005	NEL-BH182-0.2m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1579431)									
EM1806221-006	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1806299-003	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1576067)									
EM1806356-001	NEL-BH181-0.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	340	330	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1576063)									
EM1806356-001	NEL-BH181-0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1576065)									
EM1806356-001	NEL-BH181-0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1576065)									
EM1806356-001	NEL-BH181-0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1576065)									
EM1806356-001	NEL-BH181-0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1576065) - continued									
EM1806356-001	NEL-BH181-0.2m	EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1576061)									
EM1806356-001	NEL-BH181-0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1576061)									
EM1806356-001	NEL-BH181-0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1576061)									
EM1806356-001	NEL-BH181-0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1576061) - continued									
EM1806356-001	NEL-BH181-0.2m	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	0.6	<0.5	23.2	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1576061)									
EM1806356-001	NEL-BH181-0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1576062)									
EM1806356-001	NEL-BH181-0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1576065)									
EM1806356-001	NEL-BH181-0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1576062)									
EM1806356-001	NEL-BH181-0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1576065)									
EM1806356-001	NEL-BH181-0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1576065) - continued									
EM1806356-001	NEL-BH181-0.2m	EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1578312)									
EM1806387-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.89	7.92	0.380	0% - 20%
EM1806356-009	RB107	EA005-P: pH Value	----	0.01	pH Unit	5.78	5.49	5.15	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1576055)									
EM1806381-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0002	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.013	0.015	9.52	0% - 50%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.045	0.046	3.62	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.005	0.005	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.014	0.014	0.00	0% - 50%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.078	0.085	7.87	0% - 50%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1806219-007	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1576057)									
EM1806356-009	RB107	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1576056)									
EM1806398-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1806219-007	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1590930)									
EM1806356-009	RB107	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1578983)									
EM1806350-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1806399-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1578313)									
EM1806356-009	RB107	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1806398-012	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1575495)									
EM1805372-023	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1575495)									
EM1805372-023	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1575495)									
EM1805372-023	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1575495)									
EM1805372-023	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1575494)									
EM1806379-015	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1805372-023	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1575746)									
EM1805372-024	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1575494)									
EM1806379-015	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1805372-023	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1575746)									
EM1805372-024	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080: BTEXN (QC Lot: 1575494)									
EM1806379-015	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit

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 Work Order : EM1806356
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1575494) - continued									
EM1806379-015	Anonymous	EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1805372-023	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1575779)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.5	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	90.4	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	92.5	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	88.8	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	104	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	98.9	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	104	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.3	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	90.0	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	97.3	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1575778)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	94.4	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1578671)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	94.6	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1579431)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	99.9	80	110
EK040T: Fluoride Total (QCLot: 1576067)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	100	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1576063)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	84.4	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1576065)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	87.9	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	84.5	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	85.0	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	83.6	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	89.8	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	86.3	74	114
EP074H: Naphthalene (QCLot: 1576065)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	96.5	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1576065)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	68.1	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	69.6	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1576065) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	81.6	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	77.5	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	86.0	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	89.0	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	91.6	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	86.0	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	97.4	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	83.1	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	91.5	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	82.5	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	98.7	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	94.2	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	85.3	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	84.9	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	84.3	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	87.2	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	85.5	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1576061)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	97.2	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	89.4	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	100	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	90.0	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	101	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	89.1	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	95.4	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	96.3	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	75.0	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1576061)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	91.4	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	95.2	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	95.5	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	88.4	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	100.0	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	118	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	81.4	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	75.8	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	83.5	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	101	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1576061)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	100.0	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	99.0	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	106	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	100.0	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	106	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	69.8	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	104	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	105	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	102	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	105	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	107	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	103	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	105	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	104	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	104	55	137
EP075I: Organochlorine Pesticides (QCLot: 1576061)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	98.3	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	97.1	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	99.2	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	99.1	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	104	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	103	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	104	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	103	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	103	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	105	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	134	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	108	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	106	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	101	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	109	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	107	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	106	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	107	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	105	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	104	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1576062)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	99.9	73	134



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: <i>Compound</i>	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1576062) - continued								
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	104	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	89.5	77	116
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1576065)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	76.3	69	114
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1576062)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	98.3	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	98.2	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	87.4	68	124
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1576065)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	75.1	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020F: Dissolved Metals by ICP-MS (QCLot: 1576055)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.9	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.8	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.9	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	92.4	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	98.9	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.3	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	96.6	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	105	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1576057)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	106	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1576056)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	101	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1590930)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	105	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1578983)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	94.8	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1578313)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	107	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1575748)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	81.3	54	132



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1575495)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	98.7	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1575495)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	105	64	139
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	101	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	100	81	144
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	97.0	73	121
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	98.8	78	120
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	94.3	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	92.5	66	119
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	92.6	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	100	70	120
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	96.7	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	98.6	75	119
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	87.7	75	112
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	100	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	98.0	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1575495)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	95.4	82	114
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	100	76	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	96.9	82	112
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	102	62	119
EP074G: Trihalomethanes (QCLot: 1575495)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	98.8	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1575749)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	70.1	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	70.7	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	72.5	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	75.2	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	79.8	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	95.3	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	86.8	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	86.8	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	87.7	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	85.7	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	94.2	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	90.1	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	87.6	56	126

Method Blank (MB) Report

Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
	LCS	Low	High

Method: Compound	CAS Number	LOR	Unit	Result	Concentration	EPA Method (µg/L)	Detection Limit (µg/L)	Recovery Range (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1575749) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	89.6	53	123
EP075(SIM): Dibenz(a,h.)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	89.1	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	90.4	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1575616)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	84.0	44	114
EP075-EM: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	83.4	53	121
EP075-EM: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	96.0	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	84.0	57	116
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	98.6	51	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	89.6	56	120
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	109	41	125
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	103	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	99.4	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1575616)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	35.4	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	76.8	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	67.1	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	86.3	53	123
EP075-EM: 2.4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	102	52	128
EP075-EM: 2.4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	112	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	33.1	13	60
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	83.2	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	97.7	55	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	128	32	135
EP075I: Organochlorine Pesticides (QCLot: 1575616)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	105	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	105	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	104	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	108	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	107	60	132
EP075-EM: 4.4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	112	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	106	59	130
EP075-EM: 4.4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	105	62	136
EP075-EM: 4.4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	108	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1575494)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	88.9	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1575746)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1575746) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4962 µg/L	91.4	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	18252 µg/L	101	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	9349 µg/L	101	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1575494)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	88.6	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1575746)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	7058 µg/L	94.0	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	23808 µg/L	100	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1933 µg/L	96.1	58	137
EP080: BTEXN (QCLot: 1575494)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	94.6	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	88.1	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	93.3	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	91.9	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	97.8	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	81.1	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1575779)							
EM1806356-003	NEL-BH181-1.0m	EG005T: Arsenic	7440-38-2	50 mg/kg	95.2	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.9	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	99.4	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	95.5	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	88.7	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	99.6	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	93.3	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	99.8	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1575778)							
EM1806356-003	NEL-BH181-1.0m	EG035T: Mercury	7439-97-6	5 mg/kg	103	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1578671)							
EM1806222-003	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	92.3	58	114



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1579431)							
EM1806222-003	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	101	77	113
EK040T: Fluoride Total (QCLot: 1576067)							
EM1806356-003	NEL-BH181-1.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	108	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1576063)							
EM1806356-003	NEL-BH181-1.0m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	87.2	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1576065)							
EM1806356-003	NEL-BH181-1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	80.3	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	87.9	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1576065)							
EM1806356-003	NEL-BH181-1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	78.8	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	73.4	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	90.6	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1576061)							
EM1806356-005	NEL-BH182-0.2m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	101	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	95.9	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	61.1	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1576061)							
EM1806356-005	NEL-BH182-0.2m	EP075-EM: Phenol	108-95-2	1 mg/kg	94.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	68.8	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1576061)							
EM1806356-005	NEL-BH182-0.2m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	102	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	110	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1576062)							
EM1806356-007	NEL-BH182-1.0m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	91.0	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	102	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	89.0	64	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1576065)							
EM1806356-003	NEL-BH181-1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	68.8	43	111
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1576062)							
EM1806356-007	NEL-BH182-1.0m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	92.9	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	96.9	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	80.6	44	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1576065)							
EM1806356-003	NEL-BH181-1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	67.5	42	106
Sub-Matrix: WATER				Matrix Spike (MS) Report			



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1576055)							
EM1806219-007	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	99.5	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	96.7	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	97.1	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	98.8	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	97.7	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	97.3	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1576056)							
EM1806356-009	RB107	EG035F: Mercury	7439-97-6	0.01 mg/L	94.5	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1590930)							
EM1806356-010	FB107	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	100	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1578983)							
EM1806356-009	RB107	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	98.4	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1578313)							
EM1806356-010	FB107	EK040P: Fluoride	16984-48-8	5 mg/L	105	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1575495)							
EM1806356-009	RB107	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	104	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	88.6	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1575495)							
EM1806356-009	RB107	EP074: Chlorobenzene	108-90-7	20 µg/L	91.2	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1575494)							
EM1806356-009	RB107	EP080: C6 - C9 Fraction	----	280 µg/L	86.8	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1575746)							
EM1805372-025	Anonymous	EP071: C10 - C14 Fraction	----	3368 µg/L	122	50	130
		EP071: C15 - C28 Fraction	----	14735 µg/L	108	54	136
		EP071: C29 - C36 Fraction	----	7856 µg/L	107	50	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1575494)							
EM1806356-009	RB107	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	83.4	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1575746)							
EM1805372-025	Anonymous	EP071: >C10 - C16 Fraction	----	5225 µg/L	111	50	128
		EP071: >C16 - C34 Fraction	----	19994 µg/L	104	50	150
		EP071: >C34 - C40 Fraction	----	1449 µg/L	110	51	159
EP080: BTEXN (QCLot: 1575494)							
EM1806356-009	RB107	EP080: Benzene	71-43-2	20 µg/L	106	68	130
		EP080: Toluene	108-88-3	20 µg/L	95.4	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1806356	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 17-Apr-2018
Site	: North East Link	Issue Date	: 24-Apr-2018
Sampler	: SH + MLM	No. of samples received	: 11
Order number	:	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RB107, FB107	----	----	----	19-Apr-2018	16-Apr-2018	3

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
NEL-BH181-0.2m,	NEL-BH181-1.0m,	16-Apr-2018	19-Apr-2018	23-Apr-2018	✓	19-Apr-2018	19-Apr-2018	✓
NEL-BH182-0.2m,	NEL-BH182-1.0m							
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
NEL-BH181-0.2m,	NEL-BH181-1.0m,	16-Apr-2018	----	----	----	18-Apr-2018	30-Apr-2018	✓
NEL-BH182-0.2m,	NEL-BH182-1.0m							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH181-0.2m, NEL-BH182-0.2m,	NEL-BH181-1.0m, NEL-BH182-1.0m	16-Apr-2018	18-Apr-2018	13-Oct-2018	✓	19-Apr-2018	13-Oct-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH181-0.2m, NEL-BH182-0.2m,	NEL-BH181-1.0m, NEL-BH182-1.0m	16-Apr-2018	18-Apr-2018	14-May-2018	✓	19-Apr-2018	14-May-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH181-0.2m, NEL-BH182-0.2m,	NEL-BH181-1.0m, NEL-BH182-1.0m	16-Apr-2018	19-Apr-2018	14-May-2018	✓	19-Apr-2018	26-Apr-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH181-0.2m, NEL-BH182-0.2m,	NEL-BH181-1.0m, NEL-BH182-1.0m	16-Apr-2018	19-Apr-2018	30-Apr-2018	✓	20-Apr-2018	03-May-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH181-0.2m, NEL-BH182-0.2m,	NEL-BH181-1.0m, NEL-BH182-1.0m	16-Apr-2018	18-Apr-2018	14-May-2018	✓	20-Apr-2018	14-May-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH181-0.2m, NEL-BH182-0.2m,	NEL-BH181-1.0m, NEL-BH182-1.0m	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	19-Apr-2018	28-May-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH181-0.2m, NEL-BH182-0.2m,	NEL-BH181-1.0m, NEL-BH182-1.0m	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	23-Apr-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH181-0.2m, NEL-BH182-0.2m,	NEL-BH181-1.0m, NEL-BH182-1.0m	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	23-Apr-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH181-0.2m, NEL-BH182-0.2m,	NEL-BH181-1.0m, NEL-BH182-1.0m	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	23-Apr-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH181-0.2m, NEL-BH182-0.2m,	NEL-BH181-1.0m, NEL-BH182-1.0m	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	19-Apr-2018	28-May-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH181-0.2m,	NEL-BH181-1.0m,	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	19-Apr-2018	28-May-2018	✓
NEL-BH182-0.2m,	NEL-BH182-1.0m							
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH181-0.2m,	NEL-BH181-1.0m,	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	19-Apr-2018	28-May-2018	✓
NEL-BH182-0.2m,	NEL-BH182-1.0m							
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH181-0.2m,	NEL-BH181-1.0m,	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	19-Apr-2018	28-May-2018	✓
NEL-BH182-0.2m,	NEL-BH182-1.0m							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH181-0.2m,	NEL-BH181-1.0m,	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	23-Apr-2018	✓
NEL-BH182-0.2m,	NEL-BH182-1.0m							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH181-0.2m,	NEL-BH181-1.0m,	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	23-Apr-2018	✓
NEL-BH182-0.2m,	NEL-BH182-1.0m							

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	FB107	16-Apr-2018	----	----	----	19-Apr-2018	16-Apr-2018	✗
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)	FB107	16-Apr-2018	----	----	----	19-Apr-2018	13-Oct-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)	FB107	16-Apr-2018	----	----	----	19-Apr-2018	30-Apr-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	FB107	16-Apr-2018	----	----	----	24-Apr-2018	14-May-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF)	FB107	16-Apr-2018	----	----	----	19-Apr-2018	30-Apr-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	FB107	16-Apr-2018	----	----	----	19-Apr-2018	14-May-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB107,	FB107	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	28-May-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB107,	FB107	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	18-Apr-2018	30-Apr-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB107,	FB107	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	18-Apr-2018	30-Apr-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB107,	FB107	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	18-Apr-2018	30-Apr-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB107,	FB107	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	18-Apr-2018	30-Apr-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB107,	FB107	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	28-May-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB107,	FB107	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	28-May-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB107,	FB107	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	28-May-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB107,	FB107	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	28-May-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB107,	FB107	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	28-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB107, TB107	FB107,	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	18-Apr-2018	30-Apr-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB107,	FB107	16-Apr-2018	18-Apr-2018	23-Apr-2018	✓	19-Apr-2018	28-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB107, TB107	FB107,	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	18-Apr-2018	30-Apr-2018	✓



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RB107, TB107	FB107,	16-Apr-2018	18-Apr-2018	30-Apr-2018	✓	18-Apr-2018	30-Apr-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	6	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.

Page : 13 of 13
Work Order : EM1806356
Client : GHD PTY LTD
Project : 31350060910



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1806394**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 09-Apr-2018 16:35
Date Analysis Commenced : 19-Apr-2018
Issue Date : 20-Apr-2018 15:17



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- This is a rebatch of EM1805929.

Page : 3 of 4
Work Order : EM1806394
Client : GHD PTY LTD
Project : 31350060910



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
(Matrix: **WATER**)

Client sample ID

NEL-BH179_0.1m

Client sampling date / time

09-Apr-2018 00:00

Compound

CAS Number

LOR

Unit

EM1806394-001

Result

EG005C: Leachable Metals by ICPAES

Lead

7439-92-1

0.1

mg/L

<0.1



Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Client sample ID

				NEL-BH179_0.1m	----	----	----	----
Client sampling date / time				09-Apr-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1806394-001	-----	-----	-----	-----
Result					----	----	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	5.6	----	----	----	----
After HCl pH	----	0.1	pH Unit	1.3	----	----	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	----	----	----	----
Final pH	----	0.1	pH Unit	4.9	----	----	----	----

Ru Jayasinghe

From: Shirley LeCornu
Sent: Tuesday, 17 April 2018 2:38 PM
To: COC Melbourne
Subject: re-batch : EM1805929

Importance: High

Please re-batch as per below.

ALS # ^① EM1805929 sample 1
Tray MS1350
Project 31350060910
Received 9/4 @ 4:35pm
Sampled 9/4/2018

MS : 1468
BM.8/4

Environmental Division
Melbourne
Work Order Reference
EM1806394



Telephone : + 61-3-8549 9600

Shirley LeCornu
Client Services Officer – Springvale
Environmental



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2-4 Westall Rd
Springvale Vic 3171
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We are keen for your feedback! Please click here for your 1 question survey

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From: Rosli, Nazuha [mailto:nazuha.rosli@aecom.com]
Sent: Tuesday, 17 April 2018 2:17 PM
To: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Cc: Menon, Venesa <venesa.menon@aecom.com>
Subject: RE: RESULTS & EDD for ALS Workorder : EM1805929 | Overall Description: North East Link - Contamination

Hi Shirley,

Can you please undertake leachability test for NEL-BH179_0.1m for lead?

At standard TAT. Thanks.

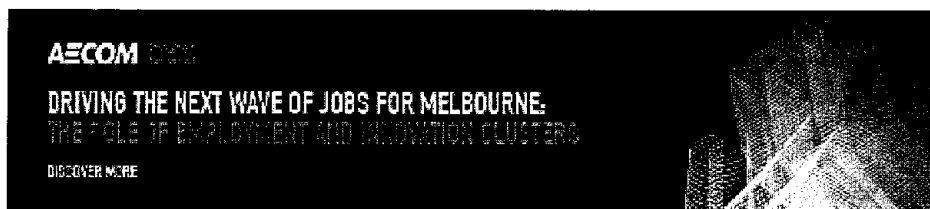
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From: angel-no-reply@alsglobal.com [<mailto:angel-no-reply@alsglobal.com>]

Sent: Monday, 16 April 2018 3:43 PM

To: Rosli, Nazuha

Subject: RESULTS & EDD for ALS Workorder : EM1805929 | Overall Description: North East Link - Contamination



Deliverables for ALS Workorder EM1805929

Project: 31350060910

Overall Description: North East Link - Contamination

Dear NAZUHA ROSLI,

Please find enclosed the following deliverables for **EM1805929**:

- 31350060910.ESDAT_EM1805929_0.Chemistry2e.CSV
- 31350060910.ESDAT_EM1805929_0.Header.XML
- 31350060910.ESDAT_EM1805929_0.Sample2e.CSV
- EM1805929_0_COA.pdf
- EM1805929_0_ENMRG.CSV
- EM1805929_0_QC.pdf
- EM1805929_0_QCI.pdf
- EM1805929_0_COA_GL_EPA_WASTE.pdf
- EM1805929_COC.pdf

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1806394**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 09-Apr-2018 16:35	Issue Date	: 18-Apr-2018
Client Requested Due Date	: 24-Apr-2018	Scheduled Reporting Date	: 24-Apr-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1805929.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN60a ASLP Leachate Procedure
EM1806394-001	09-Apr-2018 00:00	NEL-BH179_0.1m	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

QUALITY CONTROL REPORT

Work Order	: EM1806394	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 09-Apr-2018
Order number	: ----	Date Analysis Commenced	: 19-Apr-2018
C-O-C number	: ----	Issue Date	: 20-Apr-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1583099)									
EM1806144-003	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1806470-005	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit		Result	Concentration	LCS	Low
EG005C: Leachable Metals by ICPAES (QCLot: 1583099)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	108	88	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1583099)							
EM1806144-004	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	108	86	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1806394	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 09-Apr-2018
Site	: ----	Issue Date	: 20-Apr-2018
Sampler	: ----	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH179 0.1m	09-Apr-2018	19-Apr-2018	06-Oct-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH179 0.1m	19-Apr-2018	20-Apr-2018	16-Oct-2018	✔	20-Apr-2018	16-Oct-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	8	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1806904**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **KA**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **28**
No. of samples analysed : **23**

Page : 1 of 30
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 26-Apr-2018 15:00
Date Analysis Commenced : 27-Apr-2018
Issue Date : 03-May-2018 15:33



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EG020-F: Copper results for EM1806904 #26, #27, #29 & #30 has been confirmed by re-preparation and re-analysis.
- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH024_0.5-0. 6	NEL-ENV-BH024_1.0-1. 1	NEL-ENV-BH025_0.3-0. 4	NEL-ENV-BH025_1.0-1. 1	NEL-ENV-BH026_0.1-0. 2
Client sampling date / time					24-Apr-2018 13:15	24-Apr-2018 13:25	24-Apr-2018 09:30	24-Apr-2018 09:55	24-Apr-2018 10:45
Compound	CAS Number	LOR	Unit		EM1806904-002	EM1806904-003	EM1806904-005	EM1806904-007	EM1806904-009
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl ₂)	----	0.1	pH Unit		7.8	7.3	7.4	7.5	7.5
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.4	13.2	9.1	17.4	13.8
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	5	<5	8	7
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		20	23	19	30	20
Lead	7439-92-1	5	mg/kg		8	8	15	22	18
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		20	15	33	59	42
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		32	26	36	96	42
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		430	450	250	680	360
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH024_0.5-0. 6	NEL-ENV-BH024_1.0-1. 1	NEL-ENV-BH025_0.3-0. 4	NEL-ENV-BH025_1.0-1. 1	NEL-ENV-BH026_0.1-0. 2
Client sampling date / time					24-Apr-2018 13:15	24-Apr-2018 13:25	24-Apr-2018 09:30	24-Apr-2018 09:55	24-Apr-2018 10:45
Compound	CAS Number	LOR	Unit		EM1806904-002	EM1806904-003	EM1806904-005	EM1806904-007	EM1806904-009
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	0.09	0.06	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	0.09	0.06	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	0.09	0.06	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH024_0.5-0. 6	NEL-ENV-BH024_1.0-1. 1	NEL-ENV-BH025_0.3-0. 4	NEL-ENV-BH025_1.0-1. 1	NEL-ENV-BH026_0.1-0. 2
Client sampling date / time				24-Apr-2018 13:15	24-Apr-2018 13:25	24-Apr-2018 09:30	24-Apr-2018 09:55	24-Apr-2018 10:45
Compound	CAS Number	LOR	Unit	EM1806904-002	EM1806904-003	EM1806904-005	EM1806904-007	EM1806904-009
				Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued								
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH024_0.5-0. 6	NEL-ENV-BH024_1.0-1. 1	NEL-ENV-BH025_0.3-0. 4	NEL-ENV-BH025_1.0-1. 1	NEL-ENV-BH026_0.1-0. 2
Client sampling date / time				24-Apr-2018 13:15	24-Apr-2018 13:25	24-Apr-2018 09:30	24-Apr-2018 09:55	24-Apr-2018 10:45
Compound	CAS Number	LOR	Unit	EM1806904-002	EM1806904-003	EM1806904-005	EM1806904-007	EM1806904-009
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH024_0.5-0. 6	NEL-ENV-BH024_1.0-1. 1	NEL-ENV-BH025_0.3-0. 4	NEL-ENV-BH025_1.0-1. 1	NEL-ENV-BH026_0.1-0. 2
Client sampling date / time				24-Apr-2018 13:15	24-Apr-2018 13:25	24-Apr-2018 09:30	24-Apr-2018 09:55	24-Apr-2018 10:45
Compound	CAS Number	LOR	Unit	EM1806904-002	EM1806904-003	EM1806904-005	EM1806904-007	EM1806904-009
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	93.5	100	103	100	97.6
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	71.4	80.4	75.7	70.3	75.0
Toluene-D8	2037-26-5	0.1	%	62.8	80.7	68.5	62.8	66.7
4-Bromofluorobenzene	460-00-4	0.1	%	70.4	81.8	76.1	71.4	74.5
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.025	%	95.3	94.2	104	98.2	106
2-Chlorophenol-D4	93951-73-6	0.025	%	72.1	72.3	81.9	75.0	83.8
2,4,6-Tribromophenol	118-79-6	0.025	%	80.6	80.1	88.2	81.8	94.2
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.025	%	85.7	84.8	93.3	89.0	91.7
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	80.2	76.7	87.5	80.7	88.4
2-Fluorobiphenyl	321-60-8	0.025	%	94.8	99.2	106	102	112
Anthracene-d10	1719-06-8	0.025	%	92.8	95.0	104	98.9	103
4-Terphenyl-d14	1718-51-0	0.025	%	103	106	114	112	118



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH026_0.5-0. 6	NEL-ENV-BH028_0.0-0. 1	NEL-ENV-BH028_0.5-0. 6	NEL-ENV-BH028_1.5-1. 6	NEL-ENV-BH029_0-0.1
Client sampling date / time					24-Apr-2018 11:00	24-Apr-2018 08:30	24-Apr-2018 08:40	24-Apr-2018 09:00	23-Apr-2018 13:30
Compound	CAS Number	LOR	Unit		EM1806904-010	EM1806904-012	EM1806904-013	EM1806904-015	EM1806904-016
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl ₂)	----	0.1	pH Unit		7.7	5.2	7.0	7.2	5.4
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.5	9.2	16.5	20.2	9.6
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	6	5	7	8
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		22	22	20	18	21
Lead	7439-92-1	5	mg/kg		20	18	11	11	19
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		46	32	31	64	33
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		56	52	58	88	56
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		480	300	490	700	370
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
[^] Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH026_0.5-0. 6	NEL-ENV-BH028_0.0-0. 1	NEL-ENV-BH028_0.5-0. 6	NEL-ENV-BH028_1.5-1. 6	NEL-ENV-BH029_0-0.1
Client sampling date / time				24-Apr-2018 11:00	24-Apr-2018 08:30	24-Apr-2018 08:40	24-Apr-2018 09:00	23-Apr-2018 13:30
Compound	CAS Number	LOR	Unit	EM1806904-010	EM1806904-012	EM1806904-013	EM1806904-015	EM1806904-016
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH026_0.5-0.6	NEL-ENV-BH028_0.0-0.1	NEL-ENV-BH028_0.5-0.6	NEL-ENV-BH028_1.5-1.6	NEL-ENV-BH029_0-0.1
Client sampling date / time				24-Apr-2018 11:00	24-Apr-2018 08:30	24-Apr-2018 08:40	24-Apr-2018 09:00	23-Apr-2018 13:30
Compound	CAS Number	LOR	Unit	EM1806904-010	EM1806904-012	EM1806904-013	EM1806904-015	EM1806904-016
				Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued								
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH026_0.5-0. 6	NEL-ENV-BH028_0.0-0. 1	NEL-ENV-BH028_0.5-0. 6	NEL-ENV-BH028_1.5-1. 6	NEL-ENV-BH029_0-0.1
Client sampling date / time				24-Apr-2018 11:00	24-Apr-2018 08:30	24-Apr-2018 08:40	24-Apr-2018 09:00	23-Apr-2018 13:30
Compound	CAS Number	LOR	Unit	EM1806904-010	EM1806904-012	EM1806904-013	EM1806904-015	EM1806904-016
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH026_0.5-0. 6	NEL-ENV-BH028_0.0-0. 1	NEL-ENV-BH028_0.5-0. 6	NEL-ENV-BH028_1.5-1. 6	NEL-ENV-BH029_0-0.1
Client sampling date / time				24-Apr-2018 11:00	24-Apr-2018 08:30	24-Apr-2018 08:40	24-Apr-2018 09:00	23-Apr-2018 13:30
Compound	CAS Number	LOR	Unit	EM1806904-010	EM1806904-012	EM1806904-013	EM1806904-015	EM1806904-016
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	99.0	88.4	102	104	94.4
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	72.7	76.8	70.5	69.7	76.0
Toluene-D8	2037-26-5	0.1	%	67.6	72.3	61.0	61.9	71.9
4-Bromofluorobenzene	460-00-4	0.1	%	74.1	72.0	70.6	71.0	78.5
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.025	%	89.8	86.5	105	101	94.4
2-Chlorophenol-D4	93951-73-6	0.025	%	71.9	68.8	81.6	76.3	74.2
2,4,6-Tribromophenol	118-79-6	0.025	%	79.5	82.5	89.7	71.2	89.7
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.025	%	78.9	79.4	95.2	92.9	87.2
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	77.3	76.3	87.2	81.2	81.5
2-Fluorobiphenyl	321-60-8	0.025	%	95.4	90.6	108	105	99.1
Anthracene-d10	1719-06-8	0.025	%	91.0	88.9	102	99.3	96.2
4-Terphenyl-d14	1718-51-0	0.025	%	103	98.1	114	111	108



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH029_0.5-0. 6	NEL-ENV-BH030_0.5-0. 6	NEL-ENV-BH030_0.9-1. 0	NEL-ENV-BH031_0.0-0. 1	NEL-ENV-BH031_0.5-0. 6
Client sampling date / time					23-Apr-2018 13:45	23-Apr-2018 14:15	23-Apr-2018 14:30	23-Apr-2018 14:45	23-Apr-2018 15:00
Compound	CAS Number	LOR	Unit		EM1806904-017	EM1806904-019	EM1806904-020	EM1806904-021	EM1806904-022
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl ₂)	----	0.1	pH Unit		6.7	7.5	7.1	5.7	4.9
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		9.2	7.3	13.9	6.3	8.0
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		7	7	7	6	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		21	25	24	23	10
Lead	7439-92-1	5	mg/kg		24	21	26	23	16
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		57	38	78	49	12
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		69	110	65	62	25
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		410	430	480	420	210
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH029_0.5-0. 6	NEL-ENV-BH030_0.5-0. 6	NEL-ENV-BH030_0.9-1. 0	NEL-ENV-BH031_0.0-0. 1	NEL-ENV-BH031_0.5-0. 6
Client sampling date / time				23-Apr-2018 13:45	23-Apr-2018 14:15	23-Apr-2018 14:30	23-Apr-2018 14:45	23-Apr-2018 15:00
Compound	CAS Number	LOR	Unit	EM1806904-017	EM1806904-019	EM1806904-020	EM1806904-021	EM1806904-022
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH029_0.5-0. 6	NEL-ENV-BH030_0.5-0. 6	NEL-ENV-BH030_0.9-1. 0	NEL-ENV-BH031_0.0-0. 1	NEL-ENV-BH031_0.5-0. 6
Client sampling date / time				23-Apr-2018 13:45	23-Apr-2018 14:15	23-Apr-2018 14:30	23-Apr-2018 14:45	23-Apr-2018 15:00
Compound	CAS Number	LOR	Unit	EM1806904-017	EM1806904-019	EM1806904-020	EM1806904-021	EM1806904-022
				Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued								
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH029_0.5-0. 6	NEL-ENV-BH030_0.5-0. 6	NEL-ENV-BH030_0.9-1. 0	NEL-ENV-BH031_0.0-0. 1	NEL-ENV-BH031_0.5-0. 6
Client sampling date / time				23-Apr-2018 13:45	23-Apr-2018 14:15	23-Apr-2018 14:30	23-Apr-2018 14:45	23-Apr-2018 15:00
Compound	CAS Number	LOR	Unit	EM1806904-017	EM1806904-019	EM1806904-020	EM1806904-021	EM1806904-022
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH029_0.5-0. 6	NEL-ENV-BH030_0.5-0. 6	NEL-ENV-BH030_0.9-1. 0	NEL-ENV-BH031_0.0-0. 1	NEL-ENV-BH031_0.5-0. 6
Client sampling date / time				23-Apr-2018 13:45	23-Apr-2018 14:15	23-Apr-2018 14:30	23-Apr-2018 14:45	23-Apr-2018 15:00
Compound	CAS Number	LOR	Unit	EM1806904-017	EM1806904-019	EM1806904-020	EM1806904-021	EM1806904-022
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	97.7	111	101	97.5	103
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	76.4	83.0	71.8	84.9	88.6
Toluene-D8	2037-26-5	0.1	%	75.1	79.4	63.2	74.7	81.1
4-Bromofluorobenzene	460-00-4	0.1	%	71.9	82.8	71.2	76.1	88.3
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.025	%	100	106	95.4	95.2	104
2-Chlorophenol-D4	93951-73-6	0.025	%	78.9	85.3	77.3	77.3	82.0
2,4,6-Tribromophenol	118-79-6	0.025	%	88.9	98.0	87.2	87.1	98.4
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.025	%	84.3	100.0	86.2	89.8	95.9
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	83.0	92.7	82.0	86.0	90.5
2-Fluorobiphenyl	321-60-8	0.025	%	106	115	102	102	97.5
Anthracene-d10	1719-06-8	0.025	%	98.4	109	98.2	98.4	103
4-Terphenyl-d14	1718-51-0	0.025	%	110	120	107	108	112



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH031_1.5-1.6	QC3000	----	----	----
Client sampling date / time					24-Apr-2018 09:20	23-Apr-2018 14:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1806904-024	EM1806904-025	-----	-----	-----
				Result	Result		----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl ₂)	----	0.1	pH Unit		7.3	6.0	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.1	6.8	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	13	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		24	22	----	----	----
Lead	7439-92-1	5	mg/kg		21	28	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		52	43	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		85	65	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		550	330	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH031_1.5-1.6	QC3000	----	----	----
Client sampling date / time				24-Apr-2018 09:20	23-Apr-2018 14:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1806904-024	EM1806904-025	-----	-----	-----
Result				Result	Result	----	----	----

EP074A: Monocyclic Aromatic Hydrocarbons - Continued

EP074H: Naphthalene

Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
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EP074I: Volatile Halogenated Compounds

Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	----	----	----

EP075A: Phenolic Compounds (Halogenated)

2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH031_1.5-1.6	QC3000	----	----	----
Client sampling date / time				24-Apr-2018 09:20	23-Apr-2018 14:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1806904-024	EM1806904-025	-----	-----	-----
Result				Result	Result	----	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH031_1.5-1.6	QC3000	----	----	----
Client sampling date / time					24-Apr-2018 09:20	23-Apr-2018 14:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1806904-024	EM1806904-025	-----	-----	-----
					Result	Result	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH031_1.5-1.6	QC3000	----	----	----
Client sampling date / time					24-Apr-2018 09:20	23-Apr-2018 14:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1806904-024	EM1806904-025	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		98.0	96.9	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		72.8	77.3	----	----	----
Toluene-D8	2037-26-5	0.1	%		62.6	69.5	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		64.2	75.1	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		99.8	92.8	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		80.0	73.3	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		76.4	83.2	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		94.9	85.8	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		84.8	83.0	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		104	91.0	----	----	----
Anthracene-d10	1719-06-8	0.025	%		100	95.5	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		109	102	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB300	FB300	TB300	RB301	FB301
Client sampling date / time				23-Apr-2018 13:00	23-Apr-2018 15:00	23-Apr-2018 12:00	24-Apr-2018 08:15	24-Apr-2018 15:30
Compound	CAS Number	LOR	Unit	EM1806904-026	EM1806904-027	EM1806904-028	EM1806904-029	EM1806904-030
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.39	5.37	----	4.38	5.02
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	<0.0001	<0.0001
Copper	7440-50-8	0.001	mg/L	0.003	0.003	----	0.004	0.003
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	<0.01	<0.01
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	<0.005	<0.005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	<0.0001	<0.0001
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	<0.01	<0.01
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	<0.004	<0.004
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.6	<0.1	----	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	<1	<1
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	<5	<5
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB300	FB300	TB300	RB301	FB301
Client sampling date / time				23-Apr-2018 13:00	23-Apr-2018 15:00	23-Apr-2018 12:00	24-Apr-2018 08:15	24-Apr-2018 15:30
Compound	CAS Number	LOR	Unit	EM1806904-026	EM1806904-027	EM1806904-028	EM1806904-029	EM1806904-030
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	----	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	----	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	----	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	----	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	----	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	----	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	----	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	----	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	----	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	----	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Indeno(1,2,3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	<2	<2	----	<2	<2
2,4-Dichlorophenol	120-83-2	2	µg/L	<2	<2	----	<2	<2



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB300	FB300	TB300	RB301	FB301
Client sampling date / time				23-Apr-2018 13:00	23-Apr-2018 15:00	23-Apr-2018 12:00	24-Apr-2018 08:15	24-Apr-2018 15:30
Compound	CAS Number	LOR	Unit	EM1806904-026	EM1806904-027	EM1806904-028	EM1806904-029	EM1806904-030
				Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	<2	<2
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	<4	<4
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	<2	<2
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	<2	<2
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	<2	<2
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	<2	<2
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	<2	<2
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	<4	<4
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	<4	<4
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	<4	<4
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	<4	<4
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	<4	<4
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	<100	<100
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	<50	<50
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	<50	<50
Dinoseb	88-85-7	50	µg/L	<50	<50	----	<50	<50
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	<50	<50
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	<50	<50



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB300	FB300	TB300	RB301	FB301
Client sampling date / time				23-Apr-2018 13:00	23-Apr-2018 15:00	23-Apr-2018 12:00	24-Apr-2018 08:15	24-Apr-2018 15:30
Compound	CAS Number	LOR	Unit	EM1806904-026	EM1806904-027	EM1806904-028	EM1806904-029	EM1806904-030
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	83.0	74.4	----	92.5	86.0
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	89.5	90.8	----	92.3	93.5
Toluene-D8	2037-26-5	5	%	96.6	92.4	----	98.8	107
4-Bromofluorobenzene	460-00-4	5	%	96.4	97.1	----	106	104
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	25.4	26.2	----	33.4	28.6
2-Chlorophenol-D4	93951-73-6	1.0	%	68.5	66.7	----	84.3	71.4
2,4,6-Tribromophenol	118-79-6	1.0	%	55.6	52.6	----	63.7	54.0
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	81.4	79.1	----	98.8	86.8
Anthracene-d10	1719-06-8	1.0	%	90.5	84.9	----	107	94.6
4-Terphenyl-d14	1718-51-0	1.0	%	101	90.2	----	112	101



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB300	FB300	TB300	RB301	FB301
Client sampling date / time					23-Apr-2018 13:00	23-Apr-2018 15:00	23-Apr-2018 12:00	24-Apr-2018 08:15	24-Apr-2018 15:30
Compound	CAS Number	LOR	Unit		EM1806904-026	EM1806904-027	EM1806904-028	EM1806904-029	EM1806904-030
					Result	Result	Result	Result	Result
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		43.0	42.0	----	30.1	35.0
2-Chlorophenol-D4	93951-73-6	0.25	%		92.7	95.1	----	70.0	86.2
2,4,6-Tribromophenol	118-79-6	0.25	%		86.0	93.2	----	66.3	86.0
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		109	112	----	77.0	95.8
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		97.9	99.2	----	71.1	94.8
2-Fluorobiphenyl	321-60-8	0.25	%		102	112	----	80.1	104
Anthracene-d10	1719-06-8	0.25	%		98.9	108	----	78.3	99.5
4-Terphenyl-d14	1718-51-0	0.25	%		112	121	----	86.3	112
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		89.2	90.3	90.0	91.6	93.7
Toluene-D8	2037-26-5	2	%		84.0	80.0	92.1	85.8	92.9
4-Bromofluorobenzene	460-00-4	2	%		104	105	106	108	109



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB301	----	----	----	----
Client sampling date / time					24-Apr-2018 12:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1806904-031	-----	-----	-----	-----
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		95.4	----	----	----	----
Toluene-D8	2037-26-5	2	%		93.3	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		112	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
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Page 1 of 2

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format				
Project North East Link - Contamination		Address: 2 - 4 Westall Rd, Springvale		Lab Contact: Shirley LeCornu						
GHD Contact Kory Arch		Contact Email Kory.Arch@ghd.com		Container						
Standard TAT		Quote No./GHD Reference ME/124/18		Analyses Required						
Sample ID	Date	Time	Composite Sample	Preservative	Type	Number	Volume (mL)	HOLD		
NEL-ENV-BH024-0.1-0.2	24-4-18	13:00	S	No	J	1	500	X	I want 62 (Kory)	
- - -0.5-0.6	↓	13:15						X		
- - -1.0-1.1	↓	13:25						X		
- - -1.5-1.6	↓	13:45						X		
- BH025-0.3-0.4	24-4-18	09:30						X		
- - -0.6-0.7	↓	09:40						X		
- - -1.0-1.1	↓	09:55						X		
- - -1.8-1.9	↓	10:15						X		
- BH026-0.1-0.2	24-4-18	10:45						X		
- - -0.5-0.6	↓	11:00						X		
- - -1.0-1.1	↓	11:20						X		
- BH028-0.0-0.1	24-4-18	08:30						X		
- - -0.5-0.6	↓	08:40						X		
- - -1.0-1.1	↓	08:50						X		
- - -1.5-1.6	↓	09:00						X		
- BH029-0-0.1	23-4-18	13:30						X		
- BH029-0.5-0.6	↓	13:45						X		
- BH030-0-0.1	23-4-18	14:00						X		
- - -0.5-0.6	↓	14:15						X		
V-V- -0.9-1.0	↓	14:30	S	No	J	1	500	X		
Sampled by: Kory Arch / 28/4		Date/Time: 24-4-18 / 18:30	Relinquished by: Kory Arch		Date/Time: 24/4/18 1830					
Received by: Scott Hilliard		Date/Time: 26/4/18 1412	Relinquished by: Scott Hilliard		Date/Time: 26/4/18 1412					
Received by Courier: [Signature]		Date/Time: 16/12 20/04/18	Relinquished by:		Date/Time:					
Received by Lab: Kory Arch		Date/Time: 26/4 1500								
Remarks: Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecon.com) & Nazuha Rosli (nazuha.rosli@aecon.com)										

Environmental Division
Melbourne

Work Order Reference
EM1806904



Telephone: +61-3-8549 9600

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 9667 8000 Facsimile: 613 9667 8111

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Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format																
Project North East Link - Contamination		Address: 2 - 4 Westall Rd, Springvale		Lab Contact: Shirley LeCornu																		
GHD Contact David Quinn <i>Kory Auch</i>		Contact Email <i>Kory.auch</i> David.Quinn@ghd.com		Container																		
Standard TAT		Quote No./GHD Reference ME/124/18		Analyses Required																		
Sample ID	Date	Time	Composite Sample	Sample Matrix	Preservative	Disinfectant	W/Vol	Number	Volume (ml)	HOLD	TwRG 621 (e.g)	Velocity TH/PTex										
21 NEL-ENV-BH031-DD-0.1	23-4-18	14:45		S	No	J	1	500			X											
22 - - - -0.5-0.6	23-4-18	15:00									X											
23 - - - -1.0-1.1	24-4-18	09:10								X												
24 NEL-ENV-BH031-1.5-1.6	24-4-18	09:20									X											
25 QC3000	23-4-18	14:00									X											
- QC4000	23-4-18	14:00									X		Please send to EnvFins (R1)									
26 RB300	23-4-18	13:00		W	Yes	V, G, P	8				X											
27 FB300	23-4-18	15:00		W	Yes	V, G, P	8				X											
28 TB300	23-4-18	12:00		W	Yes	✓	2					X										
29 RB301	24-4-18	08:15		W	Yes	V, G, P	8				X											
30 FB301	24-4-18	15:30		W	Yes	V, G, P	8				X											
31 TB301	24-4-18	12:00		W	Yes	✓	2					X										

Sampled by:	<i>Kory Auch / MS</i>	Date/Time:	24-4-18 / 18:30	Relinquished by:		Date/Time:	
Received by:		Date/Time:		Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	<i>Mark Auch</i>	Date/Time:	26/4 1500	Relinquished by:		Date/Time:	
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecon.com) & Nazuha Rosli (nazuha.rosli@aecon.com)						

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1806904

<p>Client : GHD PTY LTD</p> <p>Contact : KORY AUCH</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : kory.auch@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number :</p> <p>C-O-C number : ----</p> <p>Site : North East Link - Contamination</p> <p>Sampler : KA</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 4</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

<p>Date Samples Received : 26-Apr-2018 15:00</p> <p>Client Requested Due : 03-May-2018</p> <p>Date :</p>	<p>Issue Date : 27-Apr-2018</p> <p>Scheduled Reporting Date : 03-May-2018</p>
----------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------

Delivery Details

<p>Mode of Delivery : Carrier</p> <p>No. of coolers/boxes : 3</p> <p>Receipt Detail :</p>	<p>Security Seal : Intact.</p> <p>Temperature : 4.5°C - Ice present</p> <p>No. of samples received / analysed : 28 / 23</p>
-------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB300	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB300	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB301	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB301	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB300	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB300	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB301	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB301	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB300	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB300	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB301	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB301	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM1806904-002 : 24-Apr-2018 13:15 : NEL-ENV-BH024_0.5-0.6
EM1806904-003 : 24-Apr-2018 13:25 : NEL-ENV-BH024_1.0-1.1
EM1806904-005 : 24-Apr-2018 09:30 : NEL-ENV-BH025_0.3-0.4
EM1806904-007 : 24-Apr-2018 09:55 : NEL-ENV-BH025_1.0-1.1
EM1806904-009 : 24-Apr-2018 10:45 : NEL-ENV-BH026_0.1-0.2
EM1806904-010 : 24-Apr-2018 11:00 : NEL-ENV-BH026_0.5-0.6
EM1806904-012 : 24-Apr-2018 08:30 : NEL-ENV-BH028_0.0-0.1
EM1806904-013 : 24-Apr-2018 08:40 : NEL-ENV-BH028_0.5-0.6
EM1806904-015 : 24-Apr-2018 09:00 : NEL-ENV-BH028_1.5-1.6
EM1806904-017 : 23-Apr-2018 13:45 : NEL-ENV-BH029_0.5-0.6
EM1806904-019 : 23-Apr-2018 14:15 : NEL-ENV-BH030_0.5-0.6
EM1806904-020 : 23-Apr-2018 14:30 : NEL-ENV-BH030_0.9-1.0
EM1806904-021 : 23-Apr-2018 14:45 : NEL-ENV-BH031_0.0-0.1
EM1806904-022 : 23-Apr-2018 15:00 : NEL-ENV-BH031_0.5-0.6
EM1806904-024 : 24-Apr-2018 09:20 : NEL-ENV-BH031_1.5-1.6

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component



Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1806904-001	24-Apr-2018 13:00	NEL-ENV-BH024_0.1-0.2	✓		
EM1806904-002	24-Apr-2018 13:15	NEL-ENV-BH024_0.5-0.6		✓	✓
EM1806904-003	24-Apr-2018 13:25	NEL-ENV-BH024_1.0-1.1		✓	✓
EM1806904-004	24-Apr-2018 13:45	NEL-ENV-BH024_1.5-1.6	✓		
EM1806904-005	24-Apr-2018 09:30	NEL-ENV-BH025_0.3-0.4		✓	✓
EM1806904-006	24-Apr-2018 09:40	NEL-ENV-BH025_0.6-0.7	✓		
EM1806904-007	24-Apr-2018 09:55	NEL-ENV-BH025_1.0-1.1		✓	✓
EM1806904-009	24-Apr-2018 10:45	NEL-ENV-BH026_0.1-0.2		✓	✓
EM1806904-010	24-Apr-2018 11:00	NEL-ENV-BH026_0.5-0.6		✓	✓
EM1806904-012	24-Apr-2018 08:30	NEL-ENV-BH028_0.0-0.1		✓	✓
EM1806904-013	24-Apr-2018 08:40	NEL-ENV-BH028_0.5-0.6		✓	✓
EM1806904-015	24-Apr-2018 09:00	NEL-ENV-BH028_1.5-1.6		✓	✓
EM1806904-016	23-Apr-2018 13:30	NEL-ENV-BH029_0.0-0.1		✓	✓
EM1806904-017	23-Apr-2018 13:45	NEL-ENV-BH029_0.5-0.6		✓	✓
EM1806904-018	23-Apr-2018 14:00	NEL-ENV-BH030_0.0-0.1	✓		
EM1806904-019	23-Apr-2018 14:15	NEL-ENV-BH030_0.5-0.6		✓	✓
EM1806904-020	23-Apr-2018 14:30	NEL-ENV-BH030_0.9-1.0		✓	✓
EM1806904-021	23-Apr-2018 14:45	NEL-ENV-BH031_0.0-0.1		✓	✓
EM1806904-022	23-Apr-2018 15:00	NEL-ENV-BH031_0.5-0.6		✓	✓
EM1806904-023	24-Apr-2018 09:10	NEL-ENV-BH031_1.0-1.1	✓		
EM1806904-024	24-Apr-2018 09:20	NEL-ENV-BH031_1.5-1.6		✓	✓
EM1806904-025	23-Apr-2018 14:00	QC3000		✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1806904-026	23-Apr-2018 13:00	RB300	✓	
EM1806904-027	23-Apr-2018 15:00	FB300	✓	
EM1806904-028	23-Apr-2018 12:00	TB300		✓
EM1806904-029	24-Apr-2018 08:15	RB301	✓	
EM1806904-030	24-Apr-2018 15:30	FB301	✓	
EM1806904-031	24-Apr-2018 12:00	TB301		✓

QUALITY CONTROL REPORT

Work Order	: EM1806904	Page	: 1 of 21
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 26-Apr-2018
Order number	:	Date Analysis Commenced	: 27-Apr-2018
C-O-C number	: ----	Issue Date	: 03-May-2018
Sampler	: KA		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 28		
No. of samples analysed	: 23		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1604123)									
EM1806904-016	NEL-ENV-BH029_0-0.1	EA001: pH (CaCl2)	----	0.1	pH Unit	5.4	5.5	1.83	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1604367)									
EM1806897-011	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	8.6	8.7	1.16	0% - 20%
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EA001: pH (CaCl2)	----	0.1	pH Unit	7.2	7.1	1.40	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1601046)									
EM1806904-002	NEL-ENV-BH024_0.5-0.6	EA055: Moisture Content	----	0.1	%	12.4	12.5	0.00	0% - 50%
EM1806904-017	NEL-ENV-BH029_0.5-0.6	EA055: Moisture Content	----	0.1	%	9.2	9.5	3.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1605318)									
EM1806904-002	NEL-ENV-BH024_0.5-0.6	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	20	20	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	20	20	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	32	0.00	No Limit
EM1806904-016	NEL-ENV-BH029_0-0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	33	34	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	8	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	21	21	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1605318) - continued									
EM1806904-016	NEL-ENV-BH029_0-0.1	EG005T: Lead	7439-92-1	5	mg/kg	19	20	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	56	56	0.00	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1605317)									
EM1806904-002	NEL-ENV-BH024_0.5-0.6	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1806904-016	NEL-ENV-BH029_0-0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1607639)									
EM1806892-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1806894-007	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1607640)									
EM1806904-003	NEL-ENV-BH024_1.0-1.1	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1806904-017	NEL-ENV-BH029_0.5-0.6	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1605337)									
EM1806825-004	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	1	2	0.00	No Limit
EM1806894-007	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1605338)									
EM1806904-003	NEL-ENV-BH024_1.0-1.1	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1806904-017	NEL-ENV-BH029_0.5-0.6	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1600187)									
EM1806894-008	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	370	360	4.40	No Limit
EM1806897-005	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	190	180	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1600188)									
EM1806904-009	NEL-ENV-BH026_0.1-0.2	EK040T: Fluoride	16984-48-8	40	mg/kg	360	360	0.00	No Limit
EM1806904-021	NEL-ENV-BH031_0.0-0.1	EK040T: Fluoride	16984-48-8	40	mg/kg	420	370	14.7	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1604110)									
EM1806898-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1600159)									
EM1806898-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1600159) - continued									
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		106-42-3							
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1600159)									
EM1806898-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1600159)									
EM1806898-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1600159) - continued									
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1604108)									
EM1806898-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1604108)									
EM1806898-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1604108) - continued									
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1604108)									
EM1806898-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	0.7	33.6	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	0.7	34.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	0.7	28.0	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1604108) - continued									
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1604108)									
EM1806898-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1604108) - continued									
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1600159)									
EM1806898-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1604109)									
EM1806898-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1600159)									
EM1806898-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1604109)									
EM1806898-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1806904-015	NEL-ENV-BH028_1.5-1.6	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1604136)									
EM1806904-030	FB301	EA005-P: pH Value	----	0.01	pH Unit	5.02	5.40	7.29	0% - 20%
EM1806872-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	4.90	4.73	3.53	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1601184)									
EM1806738-004	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.009	0.009	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1601184) - continued									
EM1806738-004	Anonymous	EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1806904-029	RB301	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1601186)									
EM1806896-001	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	0.007	0.002	117	No Limit
EM1806942-001	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1601183)									
EM1806738-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1806904-029	RB301	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1611778)									
EM1806321-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1806321-010	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1600503)									
EM1806788-004	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.016	0.016	0.00	No Limit
EM1806896-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1604135)									
EM1806321-010	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.00	No Limit
EM1806895-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.7	1.0	28.9	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1604140)									
EM1806904-030	FB301	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1806976-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1603813)									
EM1806321-009	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1806921-017	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1603813)									
EM1806321-009	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1603813) - continued									
EM1806321-009	Anonymous	EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1806921-017	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1603813)									
EM1806321-009	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1806921-017	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1603813)									
EM1806321-009	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1806921-017	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1603812)									
EM1806321-009	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1806921-017	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1603812)									
EM1806321-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1806921-017	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit

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 Work Order : EM1806904
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1603812)									
EM1806321-009	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1806921-017	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1605318)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	86.7	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.7	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	80.8	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	82.2	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	86.7	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	102	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	92.4	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	89.2	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1605317)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	77.8	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1607639)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	92.4	75	112
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1607640)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	83.3	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1605337)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	97.1	80	110
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1605338)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	93.5	80	110
EK040T: Fluoride Total (QCLot: 1600187)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	89.8	77	106
EK040T: Fluoride Total (QCLot: 1600188)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	88.8	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1604110)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	83.1	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1600159)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	88.0	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	89.4	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	90.6	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	88.7	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	94.0	76	116



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1600159) - continued								
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	90.6	74	114
EP074H: Naphthalene (QCLot: 1600159)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	99.8	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1600159)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	84.5	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	84.0	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	89.9	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.7	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	89.3	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.4	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	92.6	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	87.8	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	103	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	87.1	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	97.2	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	89.2	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	97.5	70	119
EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	94.6	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	79.4	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	91.7	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	88.0	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	86.3	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1604108)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	111	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	102	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	110	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	109	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	117	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	113	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	112	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	110	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	94.9	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1604108)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	105	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	103	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	105	59	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1604108) - continued								
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	101	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	112	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	107	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	100	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	84.7	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	95.5	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	111	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1604108)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	109	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	116	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	120	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	115	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	114	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	106	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	112	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	114	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	115	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	116	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	115	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	112	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	120	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	119	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	118	55	137
EP075I: Organochlorine Pesticides (QCLot: 1604108)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	116	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	112	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	117	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	117	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	114	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	112	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	113	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	114	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	112	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	113	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	108	63	136
EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	118	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	115	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	110	24	174



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)	
						Concentration	LCS	Low	High
EP075I: Organochlorine Pesticides (QCLot: 1604108) - continued									
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	124	55	148	
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	118	66	135	
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	117	66	134	
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	118	63	139	
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	116	59	134	
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	119	61	136	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1600159)									
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	98.6	69	114	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1604109)									
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	93.9	73	134	
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	105	81	112	
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	95.5	77	116	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1600159)									
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	97.9	69	112	
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1604109)									
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	91.7	77	127	
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	100	79	113	
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	83.0	68	124	

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1601184)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	101	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.0	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	100	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	104	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	101	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	106	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1601186)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	100	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1601183)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.6	81	114



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EG050F: Dissolved Hexavalent Chromium (QCLot: 1611778)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1600503)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	92.8	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1604135)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	97.6	85	112
EK040P: Fluoride by PC Titrator (QCLot: 1604140)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	102	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1600210)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	82.5	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1603813)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	105	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1603813)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	100	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	97.6	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	105	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	94.5	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	99.5	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	97.4	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	97.1	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	98.2	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	96.4	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	106	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	95.8	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	103	75	112
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	109	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	99.8	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1603813)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	102	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	107	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	101	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	96.7	62	119
EP074G: Trihalomethanes (QCLot: 1603813)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	98.5	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1600211)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	75.9	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	73.7	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	76.1	53	117



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1600211) - continued								
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	76.0	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	76.5	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	90.0	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	79.8	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	77.3	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	80.3	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	75.0	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	79.6	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	79.2	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	81.1	56	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	69.1	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	69.3	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	75.4	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1600208)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	88.1	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	83.6	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	88.0	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	84.8	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	87.0	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	77.8	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	90.5	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5	2	µg/L	<2	20 µg/L	90.1	47	125
	8-90-2							
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	82.9	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1600208)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	36.7	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	80.1	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	72.1	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	83.4	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	104	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	119	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	29.0	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	73.6	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	80.4	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	109	32	135
EP075I: Organochlorine Pesticides (QCLot: 1600208)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	89.8	59	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP075I: Organochlorine Pesticides (QCLot: 1600208) - continued								
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	89.1	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	87.6	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	90.1	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	91.1	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	95.8	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	89.7	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	90.0	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	90.7	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1600209)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4962 µg/L	97.2	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	18252 µg/L	114	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	9349 µg/L	118	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1603812)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	124	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1600209)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	7058 µg/L	103	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	23808 µg/L	116	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1933 µg/L	114	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1603812)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	120	66	123
EP080: BTEXN (QCLot: 1603812)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	112	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	122	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	123	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	130	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	130	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	116	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
					MS	Low	High
Client sample ID	Method: Compound	CAS Number					
EG005T: Total Metals by ICP-AES (QCLot: 1605318)							
EM1806904-003	NEL-ENV-BH024_1.0-1.1	EG005T: Arsenic	7440-38-2	50 mg/kg	98.6	78	124

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1605318) - continued							
EM1806904-003	NEL-ENV-BH024_1.0-1.1	EG005T: Cadmium	7440-43-9	50 mg/kg	97.7	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	100	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	105	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	88.3	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	97.5	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	89.6	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	95.0	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1605317)							
EM1806904-003	NEL-ENV-BH024_1.0-1.1	EG035T: Mercury	7439-97-6	5 mg/kg	91.2	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1607639)							
EM1806892-018	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	61.9	58	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1607640)							
EM1806904-005	NEL-ENV-BH025_0.3-0.4	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	60.2	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1605337)							
EM1806825-004	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	97.9	77	113
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1605338)							
EM1806904-005	NEL-ENV-BH025_0.3-0.4	EK026SF: Total Cyanide	57-12-5	20 mg/kg	106	77	113
EK040T: Fluoride Total (QCLot: 1600187)							
EM1806894-009	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	104	70	130
EK040T: Fluoride Total (QCLot: 1600188)							
EM1806904-010	NEL-ENV-BH026_0.5-0.6	EK040T: Fluoride	16984-48-8	400 mg/kg	85.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1604110)							
EM1806904-002	NEL-ENV-BH024_0.5-0.6	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	114	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1600159)							
EM1806904-002	NEL-ENV-BH024_0.5-0.6	EP074-UT: Benzene	71-43-2	2 mg/kg	73.7	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	82.4	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1600159)							
EM1806904-002	NEL-ENV-BH024_0.5-0.6	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	54.7	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	61.9	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	75.3	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1604108)							
EM1806899-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	99.9	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	94.8	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	70.1	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1604108)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1604108) - continued							
EM1806899-001	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	92.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	75.2	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1604108)							
EM1806899-001	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	102	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	87.3	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1600159)							
EM1806904-002	NEL-ENV-BH024_0.5-0.6	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	59.8	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1604109)							
EM1806904-003	NEL-ENV-BH024_1.0-1.1	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	103	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	109	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	94.0	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1600159)							
EM1806904-002	NEL-ENV-BH024_0.5-0.6	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	58.0	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1604109)							
EM1806904-003	NEL-ENV-BH024_1.0-1.1	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	101	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	101	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	93.9	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1601184)							
EM1806738-004	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	92.1	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	92.6	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	91.7	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	93.9	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	95.3	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	92.5	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1601183)							
EM1806891-054	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	99.3	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1611778)							
EM1806321-002	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	103	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1600503)							
EM1806788-005	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	116	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1604135)							
EM1806321-014	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	96.8	70	130

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 Work Order : EM1806904
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK040P: Fluoride by PC Titrator (QCLot: 1604140)							
EM1806913-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	91.2	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1603813)							
EM1806321-010	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	101	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	95.9	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1603813)							
EM1806321-010	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	108	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1603812)							
EM1806321-010	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	96.0	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1603812)							
EM1806321-010	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	94.6	44	122
EP080: BTEXN (QCLot: 1603812)							
EM1806321-010	Anonymous	EP080: Benzene	71-43-2	20 µg/L	94.8	68	130
		EP080: Toluene	108-88-3	20 µg/L	112	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1806904	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 26-Apr-2018
Site	: North East Link - Contamination	Issue Date	: 03-May-2018
Sampler	: KA	No. of samples received	: 28
Order number	:	No. of samples analysed	: 23

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

Matrix: **WATER**

Outliers : Frequency of Quality Control Samples

Matrix: WATER

Analysis Holding Time Compliance

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: SOIL

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	30-Apr-2018	30-Apr-2018	✓	30-Apr-2018	30-Apr-2018	✓
Soil Glass Jar - Unpreserved (EA001) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	30-Apr-2018	01-May-2018	✓	30-Apr-2018	30-Apr-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	----	----	----	27-Apr-2018	07-May-2018	✓
Soil Glass Jar - Unpreserved (EA055) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	----	----	----	27-Apr-2018	08-May-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	30-Apr-2018	20-Oct-2018	✓	30-Apr-2018	20-Oct-2018	✓
Soil Glass Jar - Unpreserved (EG005T) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	30-Apr-2018	21-Oct-2018	✓	30-Apr-2018	21-Oct-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	30-Apr-2018	21-May-2018	✔	02-May-2018	21-May-2018	✔
Soil Glass Jar - Unpreserved (EG035T) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	30-Apr-2018	22-May-2018	✔	02-May-2018	22-May-2018	✔
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	01-May-2018	21-May-2018	✔	01-May-2018	08-May-2018	✔
Soil Glass Jar - Unpreserved (EG048G) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	01-May-2018	22-May-2018	✔	01-May-2018	08-May-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	30-Apr-2018	07-May-2018	✔	01-May-2018	14-May-2018	✔
Soil Glass Jar - Unpreserved (EK026SF) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	30-Apr-2018	08-May-2018	✔	01-May-2018	14-May-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	27-Apr-2018	21-May-2018	✓	01-May-2018	21-May-2018	✓
Soil Glass Jar - Unpreserved (EK040T) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	27-Apr-2018	22-May-2018	✓	01-May-2018	22-May-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	30-Apr-2018	07-May-2018	✓	30-Apr-2018	09-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP066-EM) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	30-Apr-2018	08-May-2018	✓	30-Apr-2018	09-Jun-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	27-Apr-2018	30-Apr-2018	✓	28-Apr-2018	30-Apr-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	27-Apr-2018	01-May-2018	✓	28-Apr-2018	01-May-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	27-Apr-2018	30-Apr-2018	✔	28-Apr-2018	30-Apr-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	27-Apr-2018	01-May-2018	✔	28-Apr-2018	01-May-2018	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	27-Apr-2018	30-Apr-2018	✔	28-Apr-2018	30-Apr-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	27-Apr-2018	01-May-2018	✔	28-Apr-2018	01-May-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	30-Apr-2018	07-May-2018	✔	30-Apr-2018	09-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	30-Apr-2018	08-May-2018	✔	30-Apr-2018	09-Jun-2018	✔



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	30-Apr-2018	07-May-2018	✓	30-Apr-2018	09-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	30-Apr-2018	08-May-2018	✓	30-Apr-2018	09-Jun-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	30-Apr-2018	07-May-2018	✓	30-Apr-2018	09-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	30-Apr-2018	08-May-2018	✓	30-Apr-2018	09-Jun-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	30-Apr-2018	07-May-2018	✓	30-Apr-2018	09-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	30-Apr-2018	08-May-2018	✓	30-Apr-2018	09-Jun-2018	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	27-Apr-2018	30-Apr-2018	✓	28-Apr-2018	30-Apr-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH029_0.0-0.1, NEL-ENV-BH030_0.5-0.6, NEL-ENV-BH031_0.0-0.1, QC3000	NEL-ENV-BH029_0.5-0.6, NEL-ENV-BH030_0.9-1.0, NEL-ENV-BH031_0.5-0.6,	23-Apr-2018	30-Apr-2018	07-May-2018	✓	30-Apr-2018	09-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	27-Apr-2018	01-May-2018	✓	28-Apr-2018	01-May-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH024_0.5-0.6, NEL-ENV-BH025_0.3-0.4, NEL-ENV-BH026_0.1-0.2, NEL-ENV-BH028_0.0-0.1, NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH024_1.0-1.1, NEL-ENV-BH025_1.0-1.1, NEL-ENV-BH026_0.5-0.6, NEL-ENV-BH028_0.5-0.6, NEL-ENV-BH031_1.5-1.6	24-Apr-2018	30-Apr-2018	08-May-2018	✓	30-Apr-2018	09-Jun-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-ENV-BH029_0.0-1,	NEL-ENV-BH029_0.5-0.6,	23-Apr-2018	27-Apr-2018	30-Apr-2018	✔	28-Apr-2018	30-Apr-2018	✔
NEL-ENV-BH030_0.5-0.6,	NEL-ENV-BH030_0.9-1.0,							
NEL-ENV-BH031_0.0-0.1,	NEL-ENV-BH031_0.5-0.6,							
QC3000								
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-ENV-BH029_0.0-1,	NEL-ENV-BH029_0.5-0.6,	23-Apr-2018	30-Apr-2018	07-May-2018	✔	30-Apr-2018	09-Jun-2018	✔
NEL-ENV-BH030_0.5-0.6,	NEL-ENV-BH030_0.9-1.0,							
NEL-ENV-BH031_0.0-0.1,	NEL-ENV-BH031_0.5-0.6,							
QC3000								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-ENV-BH024_0.5-0.6,	NEL-ENV-BH024_1.0-1.1,	24-Apr-2018	27-Apr-2018	01-May-2018	✔	28-Apr-2018	01-May-2018	✔
NEL-ENV-BH025_0.3-0.4,	NEL-ENV-BH025_1.0-1.1,							
NEL-ENV-BH026_0.1-0.2,	NEL-ENV-BH026_0.5-0.6,							
NEL-ENV-BH028_0.0-0.1,	NEL-ENV-BH028_0.5-0.6,							
NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH031_1.5-1.6							
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-ENV-BH024_0.5-0.6,	NEL-ENV-BH024_1.0-1.1,	24-Apr-2018	30-Apr-2018	08-May-2018	✔	30-Apr-2018	09-Jun-2018	✔
NEL-ENV-BH025_0.3-0.4,	NEL-ENV-BH025_1.0-1.1,							
NEL-ENV-BH026_0.1-0.2,	NEL-ENV-BH026_0.5-0.6,							
NEL-ENV-BH028_0.0-0.1,	NEL-ENV-BH028_0.5-0.6,							
NEL-ENV-BH028_1.5-1.6,	NEL-ENV-BH031_1.5-1.6							

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) RB300,	FB300	23-Apr-2018	----	----	----	30-Apr-2018	23-Apr-2018	✘
Clear Plastic Bottle - Natural (EA005-P) RB301,	FB301	24-Apr-2018	----	----	----	30-Apr-2018	24-Apr-2018	✘
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) RB300,	FB300	23-Apr-2018	----	----	----	30-Apr-2018	20-Oct-2018	✔
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) RB301,	FB301	24-Apr-2018	----	----	----	30-Apr-2018	21-Oct-2018	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) RB300,	FB300	23-Apr-2018	----	----	----	30-Apr-2018	07-May-2018	✔
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) RB301,	FB301	24-Apr-2018	----	----	----	30-Apr-2018	08-May-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB300,	FB300	23-Apr-2018	----	----	----	02-May-2018	21-May-2018	✓
Clear Plastic Bottle - NaOH (EG050F) RB301,	FB301	24-Apr-2018	----	----	----	02-May-2018	22-May-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) RB300,	FB300	23-Apr-2018	----	----	----	27-Apr-2018	07-May-2018	✓
Opaque plastic bottle - NaOH (EK026SF) RB301,	FB301	24-Apr-2018	----	----	----	27-Apr-2018	08-May-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB300,	FB300	23-Apr-2018	----	----	----	30-Apr-2018	21-May-2018	✓
Clear Plastic Bottle - Natural (EK040P) RB301,	FB301	24-Apr-2018	----	----	----	30-Apr-2018	22-May-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB300,	FB300	23-Apr-2018	27-Apr-2018	30-Apr-2018	✓	30-Apr-2018	06-Jun-2018	✓
Amber Glass Bottle - Unpreserved (EP066) RB301,	FB301	24-Apr-2018	27-Apr-2018	01-May-2018	✓	30-Apr-2018	06-Jun-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB300,	FB300	23-Apr-2018	30-Apr-2018	07-May-2018	✓	30-Apr-2018	07-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP074) RB301,	FB301	24-Apr-2018	30-Apr-2018	08-May-2018	✓	30-Apr-2018	08-May-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB300,	FB300	23-Apr-2018	30-Apr-2018	07-May-2018	✓	30-Apr-2018	07-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP074) RB301,	FB301	24-Apr-2018	30-Apr-2018	08-May-2018	✓	30-Apr-2018	08-May-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB300,	FB300	23-Apr-2018	30-Apr-2018	07-May-2018	✓	30-Apr-2018	07-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP074) RB301,	FB301	24-Apr-2018	30-Apr-2018	08-May-2018	✓	30-Apr-2018	08-May-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB300,	FB300	23-Apr-2018	30-Apr-2018	07-May-2018	✓	30-Apr-2018	07-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP074) RB301,	FB301	24-Apr-2018	30-Apr-2018	08-May-2018	✓	30-Apr-2018	08-May-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB300,	FB300	23-Apr-2018	27-Apr-2018	30-Apr-2018	✓	30-Apr-2018	06-Jun-2018	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB301,	FB301	24-Apr-2018	27-Apr-2018	01-May-2018	✓	30-Apr-2018	06-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB300,	FB300	23-Apr-2018	27-Apr-2018	30-Apr-2018	✓	30-Apr-2018	06-Jun-2018	✓
Amber Glass Bottle - Unpreserved (EP075-EM) RB301,	FB301	24-Apr-2018	27-Apr-2018	01-May-2018	✓	30-Apr-2018	06-Jun-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB300,	FB300	23-Apr-2018	27-Apr-2018	30-Apr-2018	✓	30-Apr-2018	06-Jun-2018	✓
Amber Glass Bottle - Unpreserved (EP075-EM) RB301,	FB301	24-Apr-2018	27-Apr-2018	01-May-2018	✓	30-Apr-2018	06-Jun-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB300,	FB300	23-Apr-2018	27-Apr-2018	30-Apr-2018	✓	30-Apr-2018	06-Jun-2018	✓
Amber Glass Bottle - Unpreserved (EP075-EM) RB301,	FB301	24-Apr-2018	27-Apr-2018	01-May-2018	✓	30-Apr-2018	06-Jun-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB300,	FB300	23-Apr-2018	27-Apr-2018	30-Apr-2018	✓	30-Apr-2018	06-Jun-2018	✓
Amber Glass Bottle - Unpreserved (EP071) RB301,	FB301	24-Apr-2018	27-Apr-2018	01-May-2018	✓	30-Apr-2018	06-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB300, TB300	FB300,	23-Apr-2018	30-Apr-2018	07-May-2018	✓	30-Apr-2018	07-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB301, TB301	FB301,	24-Apr-2018	30-Apr-2018	08-May-2018	✓	30-Apr-2018	08-May-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB300,	FB300	23-Apr-2018	27-Apr-2018	30-Apr-2018	✓	30-Apr-2018	06-Jun-2018	✓
Amber Glass Bottle - Unpreserved (EP071) RB301,	FB301	24-Apr-2018	27-Apr-2018	01-May-2018	✓	30-Apr-2018	06-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB300, TB300	FB300,	23-Apr-2018	30-Apr-2018	07-May-2018	✓	30-Apr-2018	07-May-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB301, TB301	FB301,	24-Apr-2018	30-Apr-2018	08-May-2018	✓	30-Apr-2018	08-May-2018	✓

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Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RB300, TB300	FB300,	23-Apr-2018	30-Apr-2018	07-May-2018	✔	30-Apr-2018	07-May-2018	✔
Amber VOC Vial - Sulfuric Acid (EP080) RB301, TB301	FB301,	24-Apr-2018	30-Apr-2018	08-May-2018	✔	30-Apr-2018	08-May-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	3	20	15.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	5	40.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	4	34	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	18	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	18	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Certificate of Analysis

GHD Melbourne
Level 8, 180 Lonsdale St
Melbourne
VIC 3000



NATA Accredited
Accreditation Number 1261
Site Number 1254

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The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Kory Auch

Report 595959-S
Project name NORTH EAST LINK - CONTAMINATION
Project ID 31/35006/0910
Received Date Apr 27, 2018

Client Sample ID			QC4000
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ap32123
Date Sampled			Apr 23, 2018
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
Volatile Organics			
1.1-Dichloroethane	0.5	mg/kg	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5
Allyl chloride	0.5	mg/kg	< 0.5
Benzene	0.1	mg/kg	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5
Bromochloromethane	0.5	mg/kg	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5
Bromoform	0.5	mg/kg	< 0.5
Bromomethane	0.5	mg/kg	< 0.5

Client Sample ID			QC4000
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ap32123
Date Sampled			Apr 23, 2018
Test/Reference	LOR	Unit	
Volatile Organics			
Carbon disulfide	0.5	mg/kg	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5
Chloroethane	0.5	mg/kg	< 0.5
Chloroform	0.5	mg/kg	< 0.5
Chloromethane	0.5	mg/kg	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1
Iodomethane	0.5	mg/kg	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5
o-Xylene	0.1	mg/kg	< 0.1
Styrene	0.5	mg/kg	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5
Toluene	0.1	mg/kg	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5
Xylenes - Total	0.3	mg/kg	< 0.3
Total MAH*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5
4-Bromofluorobenzene (surr.)	1	%	109
Toluene-d8 (surr.)	1	%	109
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5

Client Sample ID			QC4000
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ap32123
Date Sampled			Apr 23, 2018
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	77
p-Terphenyl-d14 (surr.)	1	%	58
Organochlorine Pesticides			
Chlordanes - Total	0.1	mg/kg	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05
a-BHC	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-BHC	0.05	mg/kg	< 0.05
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05
Toxaphene	1	mg/kg	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	121
Tetrachloro-m-xylene (surr.)	1	%	118
Polychlorinated Biphenyls			
Aroclor-1016	0.1	mg/kg	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1

Client Sample ID			QC4000
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Ap32123
Date Sampled			Apr 23, 2018
Test/Reference	LOR	Unit	
Polychlorinated Biphenyls			
Total PCB*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	121
Tetrachloro-m-xylene (surr.)	1	%	118
Phenols (Halogenated)			
2-Chlorophenol	0.5	mg/kg	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	< 1
2,4,6-Trichlorophenol	1.0	mg/kg	< 1
2,6-Dichlorophenol	0.5	mg/kg	< 0.5
4-Chloro-3-methylphenol	1.0	mg/kg	< 1
Pentachlorophenol	1.0	mg/kg	< 1
Tetrachlorophenols - Total	1.0	mg/kg	< 1
Total Halogenated Phenol*	1	mg/kg	< 1
Phenols (non-Halogenated)			
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	< 20
2-Methyl-4,6-dinitrophenol	5	mg/kg	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2
2-Nitrophenol	1.0	mg/kg	< 1
2,4-Dimethylphenol	0.5	mg/kg	< 0.5
2,4-Dinitrophenol	5	mg/kg	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4
4-Nitrophenol	5	mg/kg	< 5
Dinoseb	20	mg/kg	< 20
Phenol	0.5	mg/kg	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20
Phenol-d6 (surr.)	1	%	74
Chromium (hexavalent)	1	mg/kg	< 1
Cyanide (total)	5	mg/kg	< 5
Fluoride	100	mg/kg	410
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	7.9
% Moisture	1	%	8.8
Heavy Metals			
Arsenic	2	mg/kg	6.3
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	45
Copper	5	mg/kg	29
Lead	5	mg/kg	32
Mercury	0.1	mg/kg	< 0.1
Molybdenum	5	mg/kg	< 5
Nickel	5	mg/kg	53
Selenium	2	mg/kg	< 2
Silver	0.2	mg/kg	< 0.2
Tin	10	mg/kg	< 10
Zinc	5	mg/kg	72

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Vic EPA IWRG 621 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	May 01, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
Volatile Organics	Melbourne	May 01, 2018	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 01, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 01, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	May 01, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	May 01, 2018	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Melbourne	May 01, 2018	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Phenols (Halogenated)	Melbourne	May 01, 2018	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	May 01, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Chromium (hexavalent)	Melbourne	May 01, 2018	28 Day
- Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)			
Cyanide (total)	Melbourne	May 02, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride	Melbourne	May 02, 2018	28 Day
- Method: LTM-INO-4150 Determination of Total Fluoride PART A – CIC			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	May 01, 2018	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Metals IWRG 621 : Metals M12	Melbourne	May 01, 2018	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	Apr 28, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name: GHD Pty Ltd VIC
Address: Level 8, 180 Lonsdale St
Melbourne
VIC 3000

Project Name: NORTH EAST LINK - CONTAMINATION
Project ID: 31/35006/0910

Order No.:
Report #: 595959
Phone: 8687 8000
Fax: 8687 8111

Received: Apr 27, 2018 3:16 PM
Due: May 4, 2018
Priority: 5 Day
Contact Name: Kory Auch

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Moisture Set	Vic EPA IW/RG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	QC4000	Apr 23, 2018	2:00PM	Soil	M18-Ap32123	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5			0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5			0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5			0.5	Pass	
Allyl chloride	mg/kg	< 0.5			0.5	Pass	
Benzene	mg/kg	< 0.1			0.1	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromochloromethane	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dibromomethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
trans-1,2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1,3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4,5-Trichlorophenol	mg/kg	< 1			1	Pass	
2,4,6-Trichlorophenol	mg/kg	< 1			1.0	Pass	
2,6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1.0	Pass	
Pentachlorophenol	mg/kg	< 1			1.0	Pass	
Tetrachlorophenols - Total	mg/kg	< 1			1.0	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4,6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2,4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Fluoride	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Molybdenum	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 0.2			0.2	Pass	
Tin	mg/kg	< 10			10	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	99			70-130	Pass	
TRH C10-C14	%	88			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	86			70-130	Pass	
1.1.1-Trichloroethane	%	74			70-130	Pass	
1.2-Dichlorobenzene	%	87			70-130	Pass	
1.2-Dichloroethane	%	71			70-130	Pass	
Benzene	%	88			70-130	Pass	
Ethylbenzene	%	87			70-130	Pass	
m&p-Xylenes	%	85			70-130	Pass	
Toluene	%	76			70-130	Pass	
Trichloroethene	%	70			70-130	Pass	
Xylenes - Total	%	85			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	90			70-130	Pass	
TRH C6-C10	%	95			70-130	Pass	
TRH >C10-C16	%	86			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	78			70-130	Pass	
Acenaphthylene	%	83			70-130	Pass	
Anthracene	%	98			70-130	Pass	
Benz(a)anthracene	%	95			70-130	Pass	
Benzo(a)pyrene	%	91			70-130	Pass	
Benzo(b&j)fluoranthene	%	78			70-130	Pass	
Benzo(g,h,i)perylene	%	85			70-130	Pass	
Benzo(k)fluoranthene	%	81			70-130	Pass	
Chrysene	%	88			70-130	Pass	
Dibenz(a,h)anthracene	%	123			70-130	Pass	
Fluoranthene	%	70			70-130	Pass	
Fluorene	%	85			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	115			70-130	Pass	
Naphthalene	%	77			70-130	Pass	
Phenanthrene	%	89			70-130	Pass	
Pyrene	%	76			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	113			70-130	Pass	
4,4'-DDE	%	102			70-130	Pass	
4,4'-DDT	%	80			70-130	Pass	
a-BHC	%	130			70-130	Pass	
Aldrin	%	105			70-130	Pass	
b-BHC	%	119			70-130	Pass	
d-BHC	%	116			70-130	Pass	
Dieldrin	%	103			70-130	Pass	
Endosulfan I	%	103			70-130	Pass	
Endosulfan II	%	102			70-130	Pass	
Endosulfan sulphate	%	112			70-130	Pass	
Endrin	%	103			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	%	126			70-130	Pass	
Endrin ketone	%	123			70-130	Pass	
g-BHC (Lindane)	%	127			70-130	Pass	
Heptachlor	%	123			70-130	Pass	
Heptachlor epoxide	%	102			70-130	Pass	
Hexachlorobenzene	%	122			70-130	Pass	
Methoxychlor	%	87			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	72			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	67			30-130	Pass	
2,4-Dichlorophenol	%	73			30-130	Pass	
2,4,5-Trichlorophenol	%	82			30-130	Pass	
2,4,6-Trichlorophenol	%	72			30-130	Pass	
2,6-Dichlorophenol	%	78			30-130	Pass	
4-Chloro-3-methylphenol	%	70			30-130	Pass	
Pentachlorophenol	%	85			30-130	Pass	
Tetrachlorophenols - Total	%	82			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	%	40			30-130	Pass	
2-Methyl-4,6-dinitrophenol	%	59			30-130	Pass	
2-Methylphenol (o-Cresol)	%	77			30-130	Pass	
2-Nitrophenol	%	72			30-130	Pass	
2,4-Dimethylphenol	%	69			30-130	Pass	
2,4-Dinitrophenol	%	35			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	73			30-130	Pass	
4-Nitrophenol	%	71			30-130	Pass	
Dinoseb	%	68			30-130	Pass	
Phenol	%	77			30-130	Pass	
LCS - % Recovery							
Chromium (hexavalent)	%	105			70-130	Pass	
Cyanide (total)	%	115			70-130	Pass	
Fluoride	%	102			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	100			80-120	Pass	
Cadmium	%	94			80-120	Pass	
Chromium	%	104			80-120	Pass	
Copper	%	96			80-120	Pass	
Lead	%	104			80-120	Pass	
Mercury	%	80			75-125	Pass	
Molybdenum	%	96			80-120	Pass	
Nickel	%	96			80-120	Pass	
Selenium	%	97			80-120	Pass	
Silver	%	102			80-120	Pass	
Tin	%	96			80-120	Pass	
Zinc	%	98			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M18-My03323	NCP	%	107		70-130	Pass	
TRH C10-C14	M18-My02311	NCP	%	77		70-130	Pass	
Spike - % Recovery								
Volatile Organics				Result 1				
1.1-Dichloroethene	A18-Ap32875	NCP	%	92		70-130	Pass	
1.1.1-Trichloroethane	A18-Ap32875	NCP	%	79		70-130	Pass	
1.2-Dichlorobenzene	A18-Ap32875	NCP	%	109		70-130	Pass	
1.2-Dichloroethane	A18-Ap32875	NCP	%	116		70-130	Pass	
Benzene	M18-My03323	NCP	%	75		70-130	Pass	
Ethylbenzene	M18-My03323	NCP	%	97		70-130	Pass	
m&p-Xylenes	M18-My03323	NCP	%	95		70-130	Pass	
o-Xylene	M18-My03323	NCP	%	88		70-130	Pass	
Toluene	M18-My03323	NCP	%	85		70-130	Pass	
Trichloroethene	A18-Ap32875	NCP	%	86		70-130	Pass	
Xylenes - Total	M18-My03323	NCP	%	93		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M18-My03323	NCP	%	99		70-130	Pass	
TRH C6-C10	M18-My03323	NCP	%	105		70-130	Pass	
TRH >C10-C16	M18-My02311	NCP	%	73		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M18-My03134	NCP	%	97		70-130	Pass	
Acenaphthylene	M18-My03134	NCP	%	103		70-130	Pass	
Anthracene	M18-My03134	NCP	%	128		70-130	Pass	
Benz(a)anthracene	M18-My03134	NCP	%	123		70-130	Pass	
Benzo(a)pyrene	M18-My03134	NCP	%	109		70-130	Pass	
Benzo(b&j)fluoranthene	M18-My03134	NCP	%	87		70-130	Pass	
Benzo(g,h,i)perylene	M18-My03134	NCP	%	103		70-130	Pass	
Benzo(k)fluoranthene	M18-My03134	NCP	%	106		70-130	Pass	
Chrysene	M18-My03134	NCP	%	114		70-130	Pass	
Dibenz(a,h)anthracene	M18-My03134	NCP	%	123		70-130	Pass	
Fluoranthene	M18-My03134	NCP	%	83		70-130	Pass	
Fluorene	M18-My03134	NCP	%	107		70-130	Pass	
Indeno(1,2,3-cd)pyrene	M18-My03134	NCP	%	128		70-130	Pass	
Naphthalene	M18-My03134	NCP	%	97		70-130	Pass	
Phenanthrene	M18-My03134	NCP	%	107		70-130	Pass	
Pyrene	M18-My03134	NCP	%	84		70-130	Pass	
Spike - % Recovery								
Organochlorine Pesticides				Result 1				
4,4'-DDD	M18-Ap32026	NCP	%	129		70-130	Pass	
4,4'-DDE	M18-Ap32026	NCP	%	116		70-130	Pass	
4,4'-DDT	M18-Ap32026	NCP	%	73		70-130	Pass	
a-BHC	M18-Ap32026	NCP	%	107		70-130	Pass	
Aldrin	M18-Ap32026	NCP	%	114		70-130	Pass	
b-BHC	M18-Ap32026	NCP	%	101		70-130	Pass	
d-BHC	M18-Ap32026	NCP	%	99		70-130	Pass	
Dieldrin	M18-Ap32026	NCP	%	113		70-130	Pass	
Endosulfan I	M18-Ap32026	NCP	%	101		70-130	Pass	
Endosulfan II	M18-Ap32026	NCP	%	109		70-130	Pass	
Endosulfan sulphate	M18-Ap32026	NCP	%	123		70-130	Pass	
Endrin	M18-Ap32026	NCP	%	119		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	M18-Ap32026	NCP	%	98		70-130	Pass	
Endrin ketone	M18-Ap32026	NCP	%	129		70-130	Pass	
g-BHC (Lindane)	M18-Ap32026	NCP	%	105		70-130	Pass	
Heptachlor	M18-Ap32026	NCP	%	102		70-130	Pass	
Heptachlor epoxide	M18-Ap32026	NCP	%	111		70-130	Pass	
Hexachlorobenzene	M18-Ap32026	NCP	%	104		70-130	Pass	
Methoxychlor	M18-Ap32026	NCP	%	92		70-130	Pass	
Spike - % Recovery								
Polychlorinated Biphenyls				Result 1				
Aroclor-1260	M18-Ap28702	NCP	%	106		70-130	Pass	
Spike - % Recovery								
Phenols (Halogenated)				Result 1				
2-Chlorophenol	M18-My03134	NCP	%	101		30-130	Pass	
2,4-Dichlorophenol	M18-My03134	NCP	%	114		30-130	Pass	
2,4,5-Trichlorophenol	M18-My03134	NCP	%	122		30-130	Pass	
2,4,6-Trichlorophenol	M18-My03134	NCP	%	109		30-130	Pass	
2,6-Dichlorophenol	M18-My03134	NCP	%	120		30-130	Pass	
4-Chloro-3-methylphenol	M18-My03134	NCP	%	106		30-130	Pass	
Pentachlorophenol	M18-My03134	NCP	%	112		30-130	Pass	
Tetrachlorophenols - Total	M18-My03134	NCP	%	125		30-130	Pass	
Spike - % Recovery								
Phenols (non-Halogenated)				Result 1				
2-Cyclohexyl-4,6-dinitrophenol	M18-Ap32435	NCP	%	64		30-130	Pass	
2-Methyl-4,6-dinitrophenol	M18-My03134	NCP	%	47		30-130	Pass	
2-Methylphenol (o-Cresol)	M18-My03134	NCP	%	114		30-130	Pass	
2-Nitrophenol	M18-My03134	NCP	%	103		30-130	Pass	
2,4-Dimethylphenol	M18-My03134	NCP	%	114		30-130	Pass	
2,4-Dinitrophenol	M18-Ap32435	NCP	%	57		30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M18-My03134	NCP	%	110		30-130	Pass	
4-Nitrophenol	M18-My03134	NCP	%	93		30-130	Pass	
Dinoseb	M18-My03134	NCP	%	76		30-130	Pass	
Phenol	M18-My03134	NCP	%	120		30-130	Pass	
Spike - % Recovery								
				Result 1				
Chromium (hexavalent)	M18-Ap32083	NCP	%	105		70-130	Pass	
Fluoride	M18-Ap32108	NCP	%	91		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M18-Ap32375	NCP	%	101		75-125	Pass	
Cadmium	M18-Ap32375	NCP	%	93		75-125	Pass	
Chromium	M18-Ap32375	NCP	%	118		75-125	Pass	
Copper	M18-Ap32375	NCP	%	100		75-125	Pass	
Lead	M18-Ap32375	NCP	%	120		75-125	Pass	
Mercury	M18-Ap32375	NCP	%	83		70-130	Pass	
Molybdenum	M18-Ap32375	NCP	%	96		75-125	Pass	
Nickel	S18-Ap31413	NCP	%	97		75-125	Pass	
Selenium	M18-Ap32375	NCP	%	90		75-125	Pass	
Silver	M18-Ap32375	NCP	%	103		75-125	Pass	
Tin	S18-Ap31413	NCP	%	98		75-125	Pass	
Zinc	S18-Ap31401	NCP	%	93		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M18-Ap32154	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M18-My03133	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M18-My03133	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M18-My03133	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trichlorobenzene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobutadiene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichlorobenzene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trimethylbenzene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichlorobenzene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3.5-Trimethylbenzene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.4-Dichlorobenzene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Butanone (MEK)	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Propanone (Acetone)	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chlorotoluene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Allyl chloride	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzene	M18-Ap32154	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Bromobenzene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromochloromethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromodichloromethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromoform	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromomethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon disulfide	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon Tetrachloride	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorobenzene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroform	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloromethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.2-Dichloroethene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.3-Dichloropropene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromochloromethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromomethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorodifluoromethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethylbenzene	M18-Ap32154	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Iodomethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Isopropyl benzene (Cumene)	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
m&p-Xylenes	M18-Ap32154	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methylene Chloride	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
o-Xylene	M18-Ap32154	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
Styrene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Tetrachloroethene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Toluene	M18-Ap32154	NCP	mg/kg	0.5	0.2	85	30%	Fail
trans-1,2-Dichloroethene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
trans-1,3-Dichloropropene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichloroethene	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichlorofluoromethane	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Vinyl chloride	M18-Ap32154	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Xylenes - Total	M18-Ap32154	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M18-Ap32154	NCP	mg/kg	< 0.5		<1	30%	Pass
TRH C6-C10	M18-Ap32154	NCP	mg/kg	< 20		<1	30%	Pass
TRH >C10-C16	M18-My03133	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	M18-My03133	NCP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	M18-My03133	NCP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	M18-Ap32035	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass

Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Hexachlorobenzene	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	M18-Ap32035	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Toxaphene	M18-Ap32035	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	M18-Ap32035	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1221	M18-Ap32035	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	M18-Ap32035	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1242	M18-Ap32035	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1248	M18-Ap32035	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1254	M18-Ap32035	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1260	M18-Ap32035	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Total PCB*	M18-Ap32035	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	M18-My03133	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	M18-My03133	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	M18-My03133	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	M18-My03133	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	M18-My03133	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	M18-My03133	NCP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	M18-My03133	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	M18-My03133	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
2-Nitrophenol	M18-My03133	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dinitrophenol	M18-My03133	NCP	mg/kg	< 5	< 5	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M18-My03133	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	M18-My03133	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	M18-My03133	NCP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	M18-My03133	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M18-Ap32383	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Cyanide (total)	M18-My00656	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Fluoride	M18-Ap32107	NCP	mg/kg	170	190	11	30%	Pass
pH (1:5 Aqueous extract at 25°C as rec.)	M18-My00543	NCP	pH Units	9.7	9.8	pass	30%	Pass
% Moisture	M18-Ap32116	NCP	%	22	20	9.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M18-Ap32375	NCP	mg/kg	46	47	2.0	30%	Pass
Cadmium	M18-Ap32375	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M18-Ap32375	NCP	mg/kg	20	20	3.0	30%	Pass
Copper	M18-Ap32375	NCP	mg/kg	27	28	2.0	30%	Pass
Lead	M18-Ap32375	NCP	mg/kg	85	86	1.0	30%	Pass
Mercury	M18-Ap32375	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Molybdenum	M18-Ap32375	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Nickel	M18-Ap32375	NCP	mg/kg	240	250	1.0	30%	Pass
Selenium	M18-Ap32375	NCP	mg/kg	< 2	< 2	<1	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Silver	M18-Ap32375	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tin	M18-Ap32375	NCP	mg/kg	310	330	6.0	30%	Pass
Zinc	M18-Ap32375	NCP	mg/kg	190	190	1.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Mary Makarios	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Michael Brancati	Senior Analyst-Inorganic (VIC)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EM1806989**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **KA**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **5**
No. of samples analysed : **5**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 27-Apr-2018 17:05
Date Analysis Commenced : 30-Apr-2018
Issue Date : 04-May-2018 16:30



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EG020F : EM1606989 #3 Metals results have been confirmed by re-preparation and re-analysis.
- EG035F: EM1806983 #2 Poor matrix spike recovery for mercury due to sample matrix. Confirmed by re-extraction and re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH027_0.0-0. 1	NEL-ENV-BH027_0.3-0. 4	----	----	----
Client sampling date / time				27-Apr-2018 10:00	27-Apr-2018 10:45	----	----	----
Compound	CAS Number	LOR	Unit	EM1806989-001	EM1806989-002	-----	-----	-----
				Result	Result	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl ₂)	----	0.1	pH Unit	4.4	6.7	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	9.9	8.1	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg	11	12	----	----	----
Lead	7439-92-1	5	mg/kg	17	<5	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg	12	7	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg	<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg	27	7	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<1	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	<40	230	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH027_0.0-0. 1	NEL-ENV-BH027_0.3-0. 4	----	----	----
Client sampling date / time				27-Apr-2018 10:00	27-Apr-2018 10:45	----	----	----
Compound	CAS Number	LOR	Unit	EM1806989-001	EM1806989-002	-----	-----	-----
Result				Result	Result	----	----	----

EP074A: Monocyclic Aromatic Hydrocarbons - Continued

EP074H: Naphthalene

Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
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EP074I: Volatile Halogenated Compounds

Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	----	----	----

EP075A: Phenolic Compounds (Halogenated)

2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH027_0.0-0. 1	NEL-ENV-BH027_0.3-0. 4	----	----	----
Client sampling date / time				27-Apr-2018 10:00	27-Apr-2018 10:45	----	----	----
Compound	CAS Number	LOR	Unit	EM1806989-001	EM1806989-002	-----	-----	-----
				Result	Result	----	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH027_0.0-0. 1	NEL-ENV-BH027_0.3-0. 4	----	----	----
Client sampling date / time				27-Apr-2018 10:00	27-Apr-2018 10:45	----	----	----
Compound	CAS Number	LOR	Unit	EM1806989-001	EM1806989-002	-----	-----	-----
				Result	Result	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH027_0.0-0. 1	NEL-ENV-BH027_0.3-0. 4	----	----	----
Client sampling date / time				27-Apr-2018 10:00	27-Apr-2018 10:45	----	----	----
Compound	CAS Number	LOR	Unit	EM1806989-001	EM1806989-002	-----	-----	-----
				Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	113	120	----	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	89.9	87.4	----	----	----
Toluene-D8	2037-26-5	0.1	%	65.2	68.7	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	94.1	89.9	----	----	----
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.025	%	112	115	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%	76.5	84.9	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%	76.4	86.0	----	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.025	%	97.5	93.0	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	70.2	67.8	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%	89.5	107	----	----	----
Anthracene-d10	1719-06-8	0.025	%	104	109	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%	117	122	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB302	FB302	TB302	----	----
Client sampling date / time					27-Apr-2018 11:00	27-Apr-2018 09:00	27-Apr-2018 12:00	----	----
Compound	CAS Number	LOR	Unit		EM1806989-003	EM1806989-004	EM1806989-005	-----	-----
				Result	Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		5.41	5.33	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L		0.003	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L		<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB302	FB302	TB302	----	----
Client sampling date / time				27-Apr-2018 11:00	27-Apr-2018 09:00	27-Apr-2018 12:00	----	----
Compound	CAS Number	LOR	Unit	EM1806989-003	EM1806989-004	EM1806989-005	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	<2	<2	----	----	----
2,4-Dichlorophenol	120-83-2	2	µg/L	<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB302	FB302	TB302	----	----
Client sampling date / time				27-Apr-2018 11:00	27-Apr-2018 09:00	27-Apr-2018 12:00	----	----
Compound	CAS Number	LOR	Unit	EM1806989-003	EM1806989-004	EM1806989-005	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB302	FB302	TB302	----	----
Client sampling date / time					27-Apr-2018 11:00	27-Apr-2018 09:00	27-Apr-2018 12:00	----	----
Compound	CAS Number	LOR	Unit		EM1806989-003	EM1806989-004	EM1806989-005	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		90.3	97.3	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		89.1	93.3	----	----	----
Toluene-D8	2037-26-5	5	%		83.0	95.1	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		98.9	104	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		30.9	29.1	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		68.0	67.7	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		75.8	71.9	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		82.4	81.6	----	----	----
Anthracene-d10	1719-06-8	1.0	%		90.1	83.4	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		103	106	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB302	FB302	TB302	----	----
Client sampling date / time					27-Apr-2018 11:00	27-Apr-2018 09:00	27-Apr-2018 12:00	----	----
Compound	CAS Number	LOR	Unit		EM1806989-003	EM1806989-004	EM1806989-005	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		32.7	40.6	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		82.1	96.3	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		88.2	108	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		103	128	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		95.8	117	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		105	125	----	----	----
Anthracene-d10	1719-06-8	0.25	%		106	118	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		116	128	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		96.8	102	100	----	----
Toluene-D8	2037-26-5	2	%		85.8	98.2	91.9	----	----
4-Bromofluorobenzene	460-00-4	2	%		97.2	104	99.0	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

Page 1 of 1

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale										PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format																			
Project North East Link - Contamination		Contact Email Kory Auch David.Gunn@ghd.com		Address: 2 - 4 Westall Rd, Springvale																													
GHD Contact David Gunn		Quote No./GHD Reference ME/124/18		Lab Contact: Shirley LeComu																													
Standard TAT																																	
Sample ID	Date	Time	Composite Sample	Sample Method Substrate: Yes/No Preservative	Type Substrate: Yes/No Preservative	Volume (mL)	Hold	Analysis Required																									
1 NEL-ENV-BH027-0.0-0.1	27-4-18	10:00	S	No	J	1	500	X																									
2 NEL-ENV-BH027-0.3-0.4	27-4-18	10:45	S	No	J	1	500	X																									
3 RB302		11:00	W	YES	V, G, P	8		X																									
4 FB302		09:00	W	YES	V, G, P	8		X																									
5 TB302	27-4-18	12:00	W	YES	V, G, P	2		X																									

Environmental Division
Melbourne
Work Order Reference
EM1806989



Telephone: +61-3-8549 9600

27/4/18 SH.

Sampled by:	Kory Auch / TS	Date/Time:	27-4-18 / 12:00	Relinquished by:		Date/Time:	
Received by:	REBECCA MACKLIN	Date/Time:	27-4-18 / 11:56pm	Relinquished by:	REBECCA MACKLIN	Date/Time:	27-4-18 3:38pm
Received by Courier:	BARRY SMITH	Date/Time:	3:40	Relinquished by:		Date/Time:	
Received by Lab:		Date/Time:					
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aeom.com) & Nazuha Rosli (nazuha.rosli@aeom.com)						

permitted by - Ru (1/18) 27/4/18
17.05

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1806989**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: KA		

Dates

Date Samples Received	: 27-Apr-2018 17:05	Issue Date	: 30-Apr-2018
Client Requested Due Date	: 04-May-2018	Scheduled Reporting Date	: 04-May-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 7.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 5 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB302	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB302	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB302	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB302	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB302	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB302	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM1806989-001 : 27-Apr-2018 10:00 : NEL-ENV-BH027_0.0-0.1
EM1806989-002 : 27-Apr-2018 10:45 : NEL-ENV-BH027_0.3-0.4

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1806989-001	27-Apr-2018 10:00	NEL-ENV-BH027_0.0-0.1	✓	✓
EM1806989-002	27-Apr-2018 10:45	NEL-ENV-BH027_0.3-0.4	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water V/C EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1806989-003	27-Apr-2018 11:00	RB302	✓	
EM1806989-004	27-Apr-2018 09:00	FB302	✓	
EM1806989-005	27-Apr-2018 12:00	TB302		✓

QUALITY CONTROL REPORT

Work Order	: EM1806989	Page	: 1 of 18
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 27-Apr-2018
Order number	: ----	Date Analysis Commenced	: 30-Apr-2018
C-O-C number	: ----	Issue Date	: 04-May-2018
Sampler	: KA		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 5		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1609408)									
EM1806967-024	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.9	7.8	1.27	0% - 20%
EM1807062-021	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.8	7.8	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1605598)									
EM1806834-007	Anonymous	EA055: Moisture Content	----	0.1	%	11.3	11.0	2.81	0% - 50%
EM1806834-030	Anonymous	EA055: Moisture Content	----	0.1	%	12.1	11.3	7.32	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1607727)									
EM1806978-009	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	15	12	18.4	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	31	23	27.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	26	9.89	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	76	75	1.56	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	9	7	33.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	54	52	1.92	0% - 50%
EM1806978-018	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	10	15.5	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	9	15.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	11	13.6	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1607727) - continued									
EM1806978-018	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	29	24	20.6	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1607725)									
EM1806834-007	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1806834-029	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1609387)									
EM1806834-013	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1806982-069	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1609832)									
EM1806834-013	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1806989-002	NEL-ENV-BH027_0.3-0.4	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1604238)									
EM1806834-007	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	200	200	0.00	No Limit
EM1806834-029	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	230	230	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1607515)									
EM1806804-004	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1806804-015	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1604314)									
EM1806989-001	NEL-ENV-BH027_0.0-0.1	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1604314)									
EM1806989-001	NEL-ENV-BH027_0.0-0.1	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1604314)									
EM1806989-001	NEL-ENV-BH027_0.0-0.1	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1604314) - continued									
EM1806989-001	NEL-ENV-BH027_0.0-0.1	EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1607513)									
EM1806804-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1806804-015	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1607513)									
EM1806804-004	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1607513) - continued									
EM1806804-015	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1607513)									
EM1806804-004	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1806804-015	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1607513) - continued									
EM1806804-015	Anonymous	EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1607513)									
EM1806804-004	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1806804-015	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	0.12	0.10	14.2	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1607513) - continued									
EM1806804-015	Anonymous	EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1604314)									
EM1806989-001	NEL-ENV-BH027_0.0-0.1	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1607514)									
EM1806804-004	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	180	330	62.1	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	180	250	34.7	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1806804-015	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	160	130	22.3	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1604314)									
EM1806989-001	NEL-ENV-BH027_0.0-0.1	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1607514)									
EM1806804-004	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	300	500	48.8	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	120	16.6	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1806804-015	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	210	170	24.8	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1604147)									
EM1806949-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.77	7.79	0.257	0% - 20%
EM1806976-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.07	7.11	0.564	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1609201)									
EM1806994-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.008	0.008	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1806983-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1609201) - continued									
EM1806983-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.006	0.005	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.004	0.005	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.010	0.010	0.00	No Limit
EG020A-F: Selenium	7782-49-2	0.01	mg/L	0.03	0.03	0.00	No Limit		
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1609203)									
EM1806983-001	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	0.002	0.002	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1609202)									
EM1807036-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1806983-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1611779)									
EM1806913-002	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1807116-005	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1604881)									
EM1806321-009	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1806970-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.009	0.010	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1604140)									
EM1806904-030	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1806976-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1606863)									
EM1806983-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1606863)									
EM1806983-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit

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 Work Order : EM1806989
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074F: Halogenated Aromatic Compounds (QC Lot: 1606863)									
EM1806983-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1606863)									
EM1806983-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1606864)									
EM1806985-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	43500	36700	16.8	0% - 20%
EM1806983-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1606864)									
EM1806985-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	44100	37500	16.3	0% - 20%
EM1806983-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1606864)									
EM1806985-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	5610	4770	16.2	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	17000	14100	18.5	0% - 20%
		EP080: Ethylbenzene	100-41-4	2	µg/L	998	853	15.7	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	4220	3620	15.5	0% - 20%
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	1970	1730	12.8	0% - 50%
EM1806983-001	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	222	209	5.66	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit		



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1607727)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	97.4	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	86.2	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	91.3	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	94.7	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	95.1	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	92.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	100	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.4	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	105	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	96.5	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1607725)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	77.8	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1609387)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	81.9	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1609832)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	93.0	80	110
EK040T: Fluoride Total (QCLot: 1604238)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	91.8	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1607515)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	85.9	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1604314)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	85.5	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	82.8	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	81.1	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	78.4	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	80.8	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	79.4	74	114
EP074H: Naphthalene (QCLot: 1604314)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	95.9	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1604314)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	90.2	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	76.2	62	127



Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 1604314) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	87.8	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	85.5	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	86.0	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	86.2	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	86.5	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	87.5	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	90.3	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	87.9	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	82.2	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	79.6	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	96.1	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	82.0	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	90.9	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	89.4	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.3	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	84.9	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	87.0	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1607513)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	101	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	94.7	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	99.5	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	92.9	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	99.8	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	88.0	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	99.4	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	102	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	79.6	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1607513)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	99.1	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	98.0	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	95.4	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	95.9	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	103	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	85.8	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	80.5	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	71.4	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	82.0	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	81.5	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1607513)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	103	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	106	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	105	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	105	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	106	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	98.1	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	105	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	106	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	106	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	110	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	110	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	99.3	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	115	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	114	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	114	55	137
EP075I: Organochlorine Pesticides (QCLot: 1607513)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	107	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	102	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	107	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	108	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	108	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	104	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	107	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	105	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	105	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	105	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	103	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	107	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	108	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	126	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	61.4	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	112	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	112	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	110	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	106	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	106	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1604314)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	93.4	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1609201)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	94.7	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.3	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.6	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.0	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	96.2	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.6	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	92.2	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	96.7	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.5	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1609203)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	102	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1609202)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	107	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1611779)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	105	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1604881)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	95.6	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1604140)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	102	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1604124)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	72.3	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1606863)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit	Result					
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1606863) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	92.0	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1606863)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	76.1	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	80.8	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	93.8	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	85.6	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	91.5	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	84.0	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	79.6	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	97.8	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	80.2	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	96.0	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	83.8	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	90.6	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	101	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	84.3	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1606863)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	91.3	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	89.3	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	91.4	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	83.3	62	119
EP074G: Trihalomethanes (QCLot: 1606863)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	92.2	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1604125)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	75.7	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	77.1	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	77.4	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	79.8	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	84.8	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	99.9	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	94.4	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	92.2	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	95.7	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	92.4	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	91.4	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	90.8	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	92.0	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1604125) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	92.4	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	91.6	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	90.5	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1604127)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	74.1	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	69.8	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	80.5	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	66.3	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	81.3	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	72.2	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	85.8	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	85.0	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	82.5	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1604127)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	29.4	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	65.5	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	59.0	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	72.6	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	86.3	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	97.6	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	27.6	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	67.0	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	75.1	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	103	32	135
EP075I: Organochlorine Pesticides (QCLot: 1604127)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	83.6	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	85.2	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	84.1	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	86.2	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	86.8	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	89.5	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	83.3	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	83.7	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	83.9	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1604126)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	99.0	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	102	60	133



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1609387) - continued							
EM1806834-014	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	80.8	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1609832)							
EM1806834-014	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	89.9	77	113
EK040T: Fluoride Total (QCLot: 1604238)							
EM1806834-008	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	92.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1607515)							
EM1806804-007	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	94.4	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1604314)							
EM1806989-002	NEL-ENV-BH027_0.3-0.4	EP074-UT: Benzene	71-43-2	2 mg/kg	60.2	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	62.0	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1604314)							
EM1806989-002	NEL-ENV-BH027_0.3-0.4	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	42.8	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	54.3	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	72.7	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1607513)							
EM1806804-005	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	81.8	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	80.6	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	46.0	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1607513)							
EM1806804-005	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	94.5	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	74.4	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1607513)							
EM1806804-005	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	92.6	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	92.7	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1604314)							
EM1806989-002	NEL-ENV-BH027_0.3-0.4	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	55.0	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1607514)							
EM1806804-006	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	93.1	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	101	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	92.3	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1604314)							
EM1806989-002	NEL-ENV-BH027_0.3-0.4	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	54.9	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1607514)							
EM1806804-006	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	88.9	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	96.8	67	121

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 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1607514) - continued							
EM1806804-006	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	87.4	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1609201)							
EM1806983-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	96.9	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	90.4	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	90.9	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.4	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	94.5	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	91.3	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1609202)							
EM1806983-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	# 66.6	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1611779)							
EM1806970-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	84.2	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1604881)							
EM1806321-010	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	88.3	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1604140)							
EM1806913-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	91.2	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1606863)							
EM1806983-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	93.1	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	84.8	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1606863)							
EM1806983-002	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	96.1	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1606864)							
EM1806983-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	84.1	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1606864)							
EM1806983-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	85.1	44	122
EP080: BTEXN (QCLot: 1606864)							
EM1806983-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	100	68	130
		EP080: Toluene	108-88-3	20 µg/L	101	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1806989**

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Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **KORY AUCH**

Telephone : +61-3-8549 9630

Project : 31350060910

Date Samples Received : 27-Apr-2018

Site : ----

Issue Date : 04-May-2018

Sampler : KA

No. of samples received : 5

Order number :

No. of samples analysed : 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

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 Work Order : EM1806989
 Client : GHD PTY LTD
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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	EM1806983--002	Anonymous	Mercury	7439-97-6	66.6 %	70-120%	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
RB302,	FB302	----	----	----	30-Apr-2018	27-Apr-2018	3

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	02-May-2018	04-May-2018	✓	02-May-2018	02-May-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	----	----	----	30-Apr-2018	11-May-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	01-May-2018	24-Oct-2018	✓	01-May-2018	24-Oct-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	01-May-2018	25-May-2018	✓	02-May-2018	25-May-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	02-May-2018	25-May-2018	✓	02-May-2018	09-May-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	02-May-2018	11-May-2018	✓	03-May-2018	16-May-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	30-Apr-2018	25-May-2018	✓	02-May-2018	25-May-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	01-May-2018	11-May-2018	✓	02-May-2018	10-Jun-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	30-Apr-2018	04-May-2018	✓	02-May-2018	04-May-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	30-Apr-2018	04-May-2018	✓	02-May-2018	04-May-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	30-Apr-2018	04-May-2018	✓	02-May-2018	04-May-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	01-May-2018	11-May-2018	✓	02-May-2018	10-Jun-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH027_0.0-0.1,	NEL-ENV-BH027_0.3-0.4	27-Apr-2018	01-May-2018	11-May-2018	✓	02-May-2018	10-Jun-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH027_0.0-0.1, NEL-ENV-BH027_0.3-0.4	27-Apr-2018	01-May-2018	11-May-2018	✓	02-May-2018	10-Jun-2018	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH027_0.0-0.1, NEL-ENV-BH027_0.3-0.4	27-Apr-2018	01-May-2018	11-May-2018	✓	02-May-2018	10-Jun-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH027_0.0-0.1, NEL-ENV-BH027_0.3-0.4	27-Apr-2018	01-May-2018	11-May-2018	✓	01-May-2018	10-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH027_0.0-0.1, NEL-ENV-BH027_0.3-0.4	27-Apr-2018	30-Apr-2018	04-May-2018	✓	02-May-2018	04-May-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH027_0.0-0.1, NEL-ENV-BH027_0.3-0.4	27-Apr-2018	01-May-2018	11-May-2018	✓	01-May-2018	10-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH027_0.0-0.1, NEL-ENV-BH027_0.3-0.4	27-Apr-2018	30-Apr-2018	04-May-2018	✓	02-May-2018	04-May-2018	✓

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	FB302	27-Apr-2018	----	----	----	30-Apr-2018	27-Apr-2018	✘
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)	FB302	27-Apr-2018	----	----	----	02-May-2018	24-Oct-2018	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)	FB302	27-Apr-2018	----	----	----	03-May-2018	11-May-2018	✔
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	FB302	27-Apr-2018	----	----	----	02-May-2018	25-May-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF)	FB302	27-Apr-2018	----	----	----	30-Apr-2018	11-May-2018	✔
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	FB302	27-Apr-2018	----	----	----	30-Apr-2018	25-May-2018	✔
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)	FB302	27-Apr-2018	30-Apr-2018	04-May-2018	✔	01-May-2018	09-Jun-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB302,	FB302	27-Apr-2018	01-May-2018	11-May-2018	✓	01-May-2018	11-May-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB302,	FB302	27-Apr-2018	01-May-2018	11-May-2018	✓	01-May-2018	11-May-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB302,	FB302	27-Apr-2018	01-May-2018	11-May-2018	✓	01-May-2018	11-May-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB302,	FB302	27-Apr-2018	01-May-2018	11-May-2018	✓	01-May-2018	11-May-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB302,	FB302	27-Apr-2018	30-Apr-2018	04-May-2018	✓	01-May-2018	09-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB302,	FB302	27-Apr-2018	30-Apr-2018	04-May-2018	✓	01-May-2018	09-Jun-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB302,	FB302	27-Apr-2018	30-Apr-2018	04-May-2018	✓	01-May-2018	09-Jun-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB302,	FB302	27-Apr-2018	30-Apr-2018	04-May-2018	✓	01-May-2018	09-Jun-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB302,	FB302	27-Apr-2018	30-Apr-2018	04-May-2018	✓	01-May-2018	09-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB302, TB302	FB302,	27-Apr-2018	01-May-2018	11-May-2018	✓	01-May-2018	11-May-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB302,	FB302	27-Apr-2018	30-Apr-2018	04-May-2018	✓	01-May-2018	09-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB302, TB302	FB302,	27-Apr-2018	01-May-2018	11-May-2018	✓	01-May-2018	11-May-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RB302, TB302	FB302,	27-Apr-2018	01-May-2018	11-May-2018	✓	01-May-2018	11-May-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	7	28.57	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.

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Work Order : EM1806989
Client : GHD PTY LTD
Project : 31350060910



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1807041**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **North East Link**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 17-Apr-2018 11:40
Date Analysis Commenced : 30-Apr-2018
Issue Date : 01-May-2018 15:59



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1806356.

Page : 3 of 4
 Work Order : EM1807041
 Client : GHD PTY LTD
 Project : 31350060910



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

NEL-BH181-0.2m

Client sampling date / time

16-Apr-2018 00:00

Compound

CAS Number

LOR

Unit

EM1807041-001

Result

EG005C: Leachable Metals by ICPAES

Lead	7439-92-1	0.1	mg/L	<0.1	----	----	----	----
-------------	-----------	-----	------	------	------	------	------	------



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH181-0.2m	----	----	----	----
				Client sampling date / time	16-Apr-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1807041-001	-----	-----	-----	-----
				Result		----	----	----	----
EN60: ASLP Leaching Procedure									
Initial pH	----	0.1	pH Unit		7.8	----	----	----	----
After HCl pH	----	0.1	pH Unit		1.5	----	----	----	----
Extraction Fluid pH	----	0.1	pH Unit		5.0	----	----	----	----
Final pH	----	0.1	pH Unit		5.0	----	----	----	----

Environmental Division
Melbourne
Work Order Reference
EM1807041

CS Contact: Shirley
Additional Information:

Telephone : + 61-3-8549 9600
MS: 1629

MEFM (47/13)

Shirley LeCornu

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Monday, 30 April 2018 11:18 AM
To: Shirley LeCornu
Cc: Menon, Venesa
Subject: RE: RESULTS & EDD for ALS Workorder : EM1806356 | Overall Description: North East Link

Hi Shirley,

Can you please undertake leachability test for NEL-BH181-0.2m for lead?

At standard TAT. Thanks.

Nazuha Rosli
Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
nazuha.rosli@aecom.com

AECOM
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From: angel-no-reply@alsglobal.com [mailto:angel-no-reply@alsglobal.com]
Sent: Tuesday, 24 April 2018 3:07 PM
To: Rosli, Nazuha
Subject: RESULTS & EDD for ALS Workorder : EM1806356 | Overall Description: North East Link



**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1807041**

Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001

E-mail : **david.quinn@ghd.com**
Telephone : **----**
Facsimile : **----**

Project : **31350060910**
Order number :

C-O-C number : **----**
Site : **North East Link**
Sampler :

Laboratory : **Environmental Division Melbourne**
Contact : **Shirley LeCornu**
Address : **4 Westall Rd Springvale VIC Australia**
3171

E-mail : **shirley.lecornu@Alsglobal.com**
Telephone : **+61-3-8549 9630**
Facsimile : **+61-3-8549 9626**

Page : **1 of 3**
Quote number : **EM2018GHDSE0003 (ME/124/18 -**
North East Link)
QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **17-Apr-2018 11:40**
Client Requested Due : **07-May-2018**
Date

Issue Date : **30-Apr-2018**
Scheduled Reporting Date : **07-May-2018**

Delivery Details

Mode of Delivery : **Samples On Hand**
No. of coolers/boxes : **----**
Receipt Detail :

Security Seal : **Not Available**
Temperature : **----**
No. of samples received / analysed : **1 / 1**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1806356.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN60a ASLP Leachate Procedure
EM1807041-001	16-Apr-2018 00:00	NEL-BH181-0.2m	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1807041	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 17-Apr-2018
Order number	: ----	Date Analysis Commenced	: 30-Apr-2018
C-O-C number	: ----	Issue Date	: 01-May-2018
Sampler	: ----		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1607932)									
EM1806956-003	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit		Result	Concentration	LCS	Low
EG005C: Leachable Metals by ICPAES (QCLot: 1607932)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	101	88	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1607932)							
EM1806956-002	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	97.2	86	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1807041	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 17-Apr-2018
Site	: North East Link	Issue Date	: 01-May-2018
Sampler	: ----	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH181-0.2m	16-Apr-2018	30-Apr-2018	13-Oct-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH181-0.2m	30-Apr-2018	01-May-2018	27-Oct-2018	✔	01-May-2018	27-Oct-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	1	3	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1807474**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **GHD**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **9**
No. of samples analysed : **7**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 08-May-2018 09:25
Date Analysis Commenced : 08-May-2018
Issue Date : 11-May-2018 15:54



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH188_0.2m	NEL-BH188_1.0m	NEL-BH187_0.2m	NEL-BH187_0.5m	----
Client sampling date / time					07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1807474-001	EM1807474-003	EM1807474-005	EM1807474-006	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		4.6	4.3	4.8	5.4	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		15.5	24.1	20.3	28.5	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	6	6	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		5	13	11	12	----
Lead	7439-92-1	5	mg/kg		6	6	12	13	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		4	4	33	33	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		11	6	30	35	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		120	380	520	700	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH188_0.2m	NEL-BH188_1.0m	NEL-BH187_0.2m	NEL-BH187_0.5m	----
Client sampling date / time					07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1807474-001	EM1807474-003	EM1807474-005	EM1807474-006	-----
					Result	Result	Result	Result	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH188_0.2m	NEL-BH188_1.0m	NEL-BH187_0.2m	NEL-BH187_0.5m	----
Client sampling date / time				07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	----	
Compound	CAS Number	LOR	Unit	EM1807474-001	EM1807474-003	EM1807474-005	EM1807474-006	-----	
				Result	Result	Result	Result	----	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	----	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	----	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	----	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	----	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	----	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	----	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	----	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH188_0.2m	NEL-BH188_1.0m	NEL-BH187_0.2m	NEL-BH187_0.5m	----
Client sampling date / time					07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1807474-001	EM1807474-003	EM1807474-005	EM1807474-006	-----
				Result	Result	Result	Result	Result	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH188_0.2m	NEL-BH188_1.0m	NEL-BH187_0.2m	NEL-BH187_0.5m	----
Client sampling date / time					07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1807474-001	EM1807474-003	EM1807474-005	EM1807474-006	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		95.3	94.4	91.1	94.6	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		85.2	87.9	85.2	78.0	----
Toluene-D8	2037-26-5	0.1	%		77.9	80.5	77.0	70.7	----
4-Bromofluorobenzene	460-00-4	0.1	%		85.2	90.3	85.7	79.9	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		99.0	100	92.8	113	----
2-Chlorophenol-D4	93951-73-6	0.025	%		74.7	72.8	70.4	77.5	----
2,4,6-Tribromophenol	118-79-6	0.025	%		92.3	83.8	78.5	80.7	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		87.4	88.0	81.5	90.1	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		78.3	77.1	65.4	79.1	----
2-Fluorobiphenyl	321-60-8	0.025	%		94.7	93.2	82.4	90.4	----
Anthracene-d10	1719-06-8	0.025	%		99.1	95.6	93.6	103	----
4-Terphenyl-d14	1718-51-0	0.025	%		110	105	104	113	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB108	FB108	TB108	----	----
Client sampling date / time					07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1807474-007	EM1807474-008	EM1807474-009	-----	-----
				Result	Result	Result		----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		5.52	5.60	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L		<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB108	FB108	TB108	----	----
Client sampling date / time				07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1807474-007	EM1807474-008	EM1807474-009	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB108	FB108	TB108	----	----
Client sampling date / time				07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1807474-007	EM1807474-008	EM1807474-009	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB108	FB108	TB108	----	----
Client sampling date / time					07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1807474-007	EM1807474-008	EM1807474-009	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		41.6	41.1	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		92.3	90.8	----	----	----
Toluene-D8	2037-26-5	5	%		93.5	92.1	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		102	108	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		13.4	12.4	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		41.9	39.4	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		54.3	49.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		50.6	47.1	----	----	----
Anthracene-d10	1719-06-8	1.0	%		54.6	51.2	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		76.6	70.8	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB108	FB108	TB108	----	----
Client sampling date / time					07-May-2018 00:00	07-May-2018 00:00	07-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1807474-007	EM1807474-008	EM1807474-009	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		32.9	35.0	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		80.0	84.8	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		72.4	71.8	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		73.6	74.7	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		81.1	82.5	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		81.9	82.4	----	----	----
Anthracene-d10	1719-06-8	0.25	%		89.1	90.2	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		97.7	99.5	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		96.7	95.3	97.2	----	----
Toluene-D8	2037-26-5	2	%		87.5	86.1	82.8	----	----
4-Bromofluorobenzene	460-00-4	2	%		95.6	103	96.0	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Job Number	GHD Office	Laboratory:	ALS Springvale	Address:	2 - 4 Westall Rd. Springvale	Lab Contact:	Shirley LeCornu	Container	Type	Preservative	Sample Matrix	Composite Sample	Volume (mL)	HOLD	Remarks
Project	North East Link - Contamination	GHD Contact	David Quinn	Contact Email	David.Quinn@ghd.com	Quote No./GHD Reference	ME/124/18	Sample ID	Date	Time					
1	NEL-BH188 - 0.2m	7/5/18	PM	X	S	X	X	X	X	X	X	X	X	X	
2	NEL-BH188 - 0.5m	"	"	X	S	X	X	X	X	X	X	X	X	X	
3	NEL-BH188 - 1.0m	"	"	X	S	X	X	X	X	X	X	X	X	X	
4	NEL-BH188 - 1.5m	"	"	X	S	X	X	X	X	X	X	X	X	X	
5	NEL-BH187 - 0.2m	"	"	X	S	X	X	X	X	X	X	X	X	X	
6	NEL-BH187 - 0.5m	"	"	X	S	X	X	X	X	X	X	X	X	X	
7	RB108	"	"	X	W	X	X	X	VLP	X	X	X	X	X	
8	FB108	"	"	X	W	X	X	X	VLP	X	X	X	X	X	
9	TB108	"	"	X	W	X	X	X	VLP	X	X	X	X	X	

Environmental Division
Melbourne
Work Order Reference
EM1807474



Telephone: +61-3-8649 9800

Sampled by:	GHD	Date/Time:	7/5/18 PM	Relinquished by:		Date/Time:
Received by:		Date/Time:		Relinquished by:		Date/Time:
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:
Received by Lab:	Bharathi (ALS)	Date/Time:	8/5/18 9.25 am			
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aeacom.com) & Nazuha Rosli (nazuha.rosli@aeacom.com)					

ALS ID

Shirley LeCornu

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Tuesday, 8 May 2018 11:29 AM
To: Shirley LeCornu
Cc: Menon, Venesa; David Quinn
Subject: RE: CoC for ALS Workorder : EM1807474 | Overall Description: ON HOLD

Hi Shirley,

Please analyse:

1. NEL-BH187_0.2m = IWRG621
2. NEL-BH187_0.5m = IWRG621
3. NEL-BH188_0.2m = IWRG621
4. NEL-BH188_1.0m = IWRG621
5. RB108 = IWRG621 water equivalent
6. TB108 = Volatile TPH/BTEX
7. FB108 = IWRG621 water equivalent

At standard TAT. Thanks.

Nazuha Rosli

Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
nazuha.rosli@aecom.com

AECOM

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From: David Quinn [<mailto:David.Quinn@ghd.com>]
Sent: Tuesday, 8 May 2018 9:54 AM
To: Rosli, Nazuha
Cc: Menon, Venesa
Subject: FW: CoC for ALS Workorder : EM1807474 | Overall Description: ON HOLD

FYI

Bharathi Narayanan

From: Bharathi Narayanan
Sent: Tuesday, 8 May 2018 10:50 AM
To: Shirley LeCornu
Cc: COC Melbourne
Subject: ON HOLD- EM1807474 - GHDSER, Project: 31350060910
Attachments: EM1807474_COC.pdf

Hi Shirley,

Please find the attached for samples received "On Hold".

Regards,
Bharathi

Creation/Committal Officer - Melbourne
ALS | Environmental Division
2-4 Westall Road
Springvale VIC 3171 Australia
T +61 3 8549 9617
F +61 3 8549 9601

From: Ranil Weerakkody **On Behalf Of** COC Melbourne
Sent: Tuesday, 8 May 2018 10:45 AM
To: Bharathi Narayanan <Bharathi.Narayanan@ALSGlobal.com>
Subject: 7474

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1807474

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : North East Link - Contamination</p> <p>Sampler : GHD</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 3</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

<p>Date Samples Received : 08-May-2018 09:25</p> <p>Client Requested Due : 15-May-2018</p> <p>Date : ----</p>	<p>Issue Date : 08-May-2018</p> <p>Scheduled Reporting Date : 15-May-2018</p>
------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------

Delivery Details

<p>Mode of Delivery : Carrier</p> <p>No. of coolers/boxes : 1</p> <p>Receipt Detail : ----</p>	<p>Security Seal : Intact.</p> <p>Temperature : 3.2°C - Ice present</p> <p>No. of samples received / analysed : 9 / 7</p>
---------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB108	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB108	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB108	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB108	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB108	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB108	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1807474-001	07-May-2018 00:00	NEL-BH188_0.2m		✓	✓
EM1807474-002	07-May-2018 00:00	NEL-BH188_0.5m	✓		
EM1807474-003	07-May-2018 00:00	NEL-BH188_1.0m		✓	✓
EM1807474-004	07-May-2018 00:00	NEL-BH188_1.5m	✓		
EM1807474-005	07-May-2018 00:00	NEL-BH187_0.2m		✓	✓
EM1807474-006	07-May-2018 00:00	NEL-BH187_0.5m		✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1807474-007	07-May-2018 00:00	RB108	✓	
EM1807474-008	07-May-2018 00:00	FB108	✓	
EM1807474-009	07-May-2018 00:00	TB108		✓

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1807474	Page	: 1 of 17
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 08-May-2018
Order number	:	Date Analysis Commenced	: 08-May-2018
C-O-C number	: ----	Issue Date	: 11-May-2018
Sampler	: GHD		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 9		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1625894)									
EM1807474-001	NEL-BH188_0.2m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	4.6	4.6	0.00	0% - 20%
EM1807478-011	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	9.7	9.8	1.02	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1624722)									
EM1807474-001	NEL-BH188_0.2m	EA055: Moisture Content	----	0.1	%	15.5	14.0	10.1	0% - 50%
EM1807494-013	Anonymous	EA055: Moisture Content	----	0.1	%	18.5	17.2	6.80	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1625971)									
EM1807432-014	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	46	49	6.66	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	12	14.5	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	21	20	8.04	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	16	25.7	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	96	98	1.59	0% - 50%
EM1807478-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	46	39	16.1	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	17	14	20.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	8	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1625971) - continued									
EM1807478-008	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	43	34	22.2	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1625972)									
EM1807432-014	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1807478-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1624929)									
EM1807407-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1807474-006	NEL-BH187_0.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1626479)									
EM1807474-001	NEL-BH188_0.2m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1807478-011	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1624584)									
EM1807465-025	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	210	210	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1624699)									
EM1807474-001	NEL-BH188_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1624558)									
EM1807474-001	NEL-BH188_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1624558)									
EM1807474-001	NEL-BH188_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1624558)									
EM1807474-001	NEL-BH188_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1624558) - continued									
EM1807474-001	NEL-BH188_0.2m	EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1624697)									
EM1807474-001	NEL-BH188_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1624697)									
EM1807474-001	NEL-BH188_0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1624697)									
EM1807474-001	NEL-BH188_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1624697) - continued									
EM1807474-001	NEL-BH188_0.2m	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1624697)									
EM1807474-001	NEL-BH188_0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1624558)									
EM1807474-001	NEL-BH188_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1624698)									
EM1807474-001	NEL-BH188_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1624558)									
EM1807474-001	NEL-BH188_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1624698)									
EM1807474-001	NEL-BH188_0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1624698) - continued									
EM1807474-001	NEL-BH188_0.2m	EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1625810)									
EM1807276-010	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.32	8.34	0.240	0% - 20%
EM1807276-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.02	8.03	0.125	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1625772)									
EM1807397-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0498	0.0497	0.235	0% - 20%
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.110	0.111	1.06	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	1.20	1.18	2.40	0% - 20%
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.010	0.009	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	20.2	19.9	1.54	0% - 20%
EM1807475-009	Anonymous	EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.047	0.049	4.02	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EM1807474-007	RB108	EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.030	0.029	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1625774)									
EM1807474-007	RB108	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1625773)									
EM1807433-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1625010)									
EM1807240-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1626037)									
EM1807226-016	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1625811)									
EM1807276-010	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.4	0.4	0.00	No Limit
EM1807276-004	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1625596)									
EM1807515-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1625596)									
EM1807515-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1625596)									
EM1807515-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1625596)									
EM1807515-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1625595)									
EM1807493-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1807515-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1625595)									
EM1807493-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1807515-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1625595)									
EM1807493-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1807515-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit

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Work Order : EM1807474
Client : GHD PTY LTD
Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1625595) - continued									
EM1807515-001	Anonymous	EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1625971)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	84.8	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	102	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	80.5	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	78.7	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	86.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	100	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	88.7	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	83.6	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1625972)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.0	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1624929)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	82.4	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1626479)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	86.7	80	110
EK040T: Fluoride Total (QCLot: 1624584)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	94.0	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1624699)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	80.5	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1624558)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	85.4	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	87.4	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	89.3	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	86.9	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	94.0	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	89.7	74	114
EP074H: Naphthalene (QCLot: 1624558)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	97.7	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1624558)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	72.7	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	76.3	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1624558) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	94.6	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	80.4	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	87.8	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.0	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	81.3	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	76.8	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	99.2	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	82.7	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	101	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	85.0	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	97.0	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	106	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	75.0	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.5	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	87.0	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	92.4	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	82.8	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1624697)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	88.7	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	88.9	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	86.1	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	81.8	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	90.1	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	78.2	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	87.1	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	87.6	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	66.5	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1624697)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	84.2	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	85.4	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	78.2	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	86.1	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	108	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	76.4	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	74.3	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	61.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	69.9	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	54.8	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1624697)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	87.2	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	93.4	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	96.5	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	94.7	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	95.3	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	64.0	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	94.4	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	95.9	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	92.6	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	98.1	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	100	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	96.4	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	95.3	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	94.1	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	94.4	55	137
EP075I: Organochlorine Pesticides (QCLot: 1624697)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	94.3	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	89.4	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	92.5	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	95.0	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	96.1	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	89.1	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	91.9	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	89.8	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	91.0	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	88.9	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	97.2	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	91.1	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	95.6	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	70.7	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	94.8	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	97.5	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	97.2	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	94.9	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	89.9	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	92.1	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1624558)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	85.7	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1625772)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.4	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.5	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	99.6	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.2	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	98.9	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.1	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1625774)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	96.3	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1625773)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	89.4	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1625010)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	101	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1626037)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	87.6	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1625811)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	92.0	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1624848)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	60.5	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1625596)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1625596) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	99.3	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1625596)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	93.5	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	91.8	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	103	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	92.8	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	97.7	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	92.8	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	90.4	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	98.0	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	93.2	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	104	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	93.4	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	98.3	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	109	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	101	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1625596)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	99.0	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	103	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	100	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	98.0	62	119
EP074G: Trihalomethanes (QCLot: 1625596)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	99.6	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1624849)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	56.0	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	53.0	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	58.0	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	55.2	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	62.0	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	67.2	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	62.0	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	76.0	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	61.2	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	64.7	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	68.5	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	77.5	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	83.8	56	126



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1624849) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	63.0	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	65.0	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	74.4	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1624856)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	109	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	100	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	111	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	96.0	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	109	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	96.1	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	115	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	106	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	107	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1624856)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	46.4	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	94.8	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	84.7	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	102	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	122	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	105	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	47.6	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	116	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	# 132	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	125	32	135
EP075I: Organochlorine Pesticides (QCLot: 1624856)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	116	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	113	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	110	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	115	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	115	60	132
EP075-EM: 4,4`-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	118	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	114	59	130
EP075-EM: 4,4`-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	113	62	136
EP075-EM: 4,4`-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	114	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1624850)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	64.3	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	73.1	60	133



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1624929) - continued							
EM1807407-008	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	74.5	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1626479)							
EM1807474-003	NEL-BH188_1.0m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	86.8	77	113
EK040T: Fluoride Total (QCLot: 1624584)							
EM1807474-001	NEL-BH188_0.2m	EK040T: Fluoride	16984-48-8	400 mg/kg	91.5	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1624699)							
EM1807474-006	NEL-BH187_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	80.4	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1624558)							
EM1807474-003	NEL-BH188_1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	75.8	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	76.3	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1624558)							
EM1807474-003	NEL-BH188_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	68.2	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	70.2	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	81.8	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1624697)							
EM1807474-003	NEL-BH188_1.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	97.6	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	80.3	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	43.3	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1624697)							
EM1807474-003	NEL-BH188_1.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	96.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	71.3	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1624697)							
EM1807474-003	NEL-BH188_1.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	99.6	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	102	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1624558)							
EM1807474-003	NEL-BH188_1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	61.6	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1624698)							
EM1807474-005	NEL-BH187_0.2m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	87.6	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	103	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	91.7	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1624558)							
EM1807474-003	NEL-BH188_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	60.5	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1624698)							
EM1807474-005	NEL-BH187_0.2m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	89.7	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	97.8	67	121

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 Work Order : EM1807474
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1624698) - continued							
EM1807474-005	NEL-BH187_0.2m	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	84.8	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1625772)							
EM1807397-003	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	88.3	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	93.6	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	87.7	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	# Not Determined	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	89.0	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	# Not Determined	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1625773)							
EM1807474-007	RB108	EG035F: Mercury	7439-97-6	0.01 mg/L	90.0	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1625010)							
EM1807474-007	RB108	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	101	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1626037)							
EM1807226-017	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	109	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1625811)							
EM1807276-003	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	101	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1625596)							
EM1807515-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	82.4	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	73.5	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1625596)							
EM1807515-002	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	84.2	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1625595)							
EM1807515-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	65.5	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1625595)							
EM1807515-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	64.3	44	122
EP080: BTEXN (QCLot: 1625595)							
EM1807515-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	78.1	68	130
		EP080: Toluene	108-88-3	20 µg/L	82.7	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1807474	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 08-May-2018
Site	: North East Link - Contamination	Issue Date	: 11-May-2018
Sampler	: GHD	No. of samples received	: 9
Order number	:	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- Laboratory Control outliers exist - please see following pages for full details.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075A: Phenolic Compounds (Non-halogenated)	QC-1624856-001	----	Dinoseb	88-85-7	132 %	55-128%	Recovery greater than upper control limit
Matrix Spike (MS) Recoveries							
EG020F: Dissolved Metals by ICP-MS	EM1807397--003	Anonymous	Lead	7439-92-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG020F: Dissolved Metals by ICP-MS	EM1807397--003	Anonymous	Zinc	7440-66-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RB108,	FB108	----	----	----	09-May-2018	07-May-2018
						2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) NEL-BH188_0.2m, NEL-BH187_0.2m, NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	09-May-2018	14-May-2018	✔	09-May-2018	09-May-2018	✔
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) NEL-BH188_0.2m, NEL-BH187_0.2m, NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	----	----	----	08-May-2018	21-May-2018	✔
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) NEL-BH188_0.2m, NEL-BH187_0.2m, NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	09-May-2018	03-Nov-2018	✔	09-May-2018	03-Nov-2018	✔
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) NEL-BH188_0.2m, NEL-BH187_0.2m, NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	09-May-2018	04-Jun-2018	✔	09-May-2018	04-Jun-2018	✔
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G) NEL-BH188_0.2m, NEL-BH187_0.2m, NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	04-Jun-2018	✔	09-May-2018	15-May-2018	✔
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH188_0.2m, NEL-BH187_0.2m, NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	09-May-2018	21-May-2018	✔	10-May-2018	23-May-2018	✔
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T) NEL-BH188_0.2m, NEL-BH187_0.2m, NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	04-Jun-2018	✔	10-May-2018	04-Jun-2018	✔
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH188_0.2m, NEL-BH187_0.2m, NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	21-May-2018	✔	09-May-2018	17-Jun-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH188_0.2m, NEL-BH187_0.2m,	NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	14-May-2018	✔	09-May-2018	14-May-2018	✔
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH188_0.2m, NEL-BH187_0.2m,	NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	14-May-2018	✔	09-May-2018	14-May-2018	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH188_0.2m, NEL-BH187_0.2m,	NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	14-May-2018	✔	09-May-2018	14-May-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH188_0.2m, NEL-BH187_0.2m,	NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	21-May-2018	✔	09-May-2018	17-Jun-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH188_0.2m, NEL-BH187_0.2m,	NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	21-May-2018	✔	09-May-2018	17-Jun-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH188_0.2m, NEL-BH187_0.2m,	NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	21-May-2018	✔	09-May-2018	17-Jun-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH188_0.2m, NEL-BH187_0.2m,	NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	21-May-2018	✔	09-May-2018	17-Jun-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH188_0.2m, NEL-BH187_0.2m,	NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	14-May-2018	✔	09-May-2018	14-May-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH188_0.2m, NEL-BH187_0.2m,	NEL-BH188_1.0m, NEL-BH187_0.5m	07-May-2018	08-May-2018	14-May-2018	✔	09-May-2018	14-May-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	FB108	07-May-2018	----	----	----	09-May-2018	07-May-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)	FB108	07-May-2018	----	----	----	09-May-2018	03-Nov-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)	FB108	07-May-2018	----	----	----	10-May-2018	21-May-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	FB108	07-May-2018	----	----	----	08-May-2018	04-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)	FB108	07-May-2018	----	----	----	09-May-2018	21-May-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	FB108	07-May-2018	----	----	----	09-May-2018	04-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)	FB108	07-May-2018	08-May-2018	14-May-2018	✓	09-May-2018	17-Jun-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)	FB108	07-May-2018	09-May-2018	21-May-2018	✓	09-May-2018	21-May-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB108	07-May-2018	09-May-2018	21-May-2018	✓	09-May-2018	21-May-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB108	07-May-2018	09-May-2018	21-May-2018	✓	09-May-2018	21-May-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)	FB108	07-May-2018	09-May-2018	21-May-2018	✓	09-May-2018	21-May-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))	FB108	07-May-2018	08-May-2018	14-May-2018	✓	09-May-2018	17-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)	FB108	07-May-2018	09-May-2018	14-May-2018	✓	10-May-2018	18-Jun-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)								
RB108,	FB108	07-May-2018	09-May-2018	14-May-2018	✓	10-May-2018	18-Jun-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM)								
RB108,	FB108	07-May-2018	09-May-2018	14-May-2018	✓	10-May-2018	18-Jun-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
RB108,	FB108	07-May-2018	08-May-2018	14-May-2018	✓	09-May-2018	17-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RB108,	FB108,	07-May-2018	09-May-2018	21-May-2018	✓	09-May-2018	21-May-2018	✓
TB108								
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
RB108,	FB108	07-May-2018	08-May-2018	14-May-2018	✓	09-May-2018	17-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RB108,	FB108,	07-May-2018	09-May-2018	21-May-2018	✓	09-May-2018	21-May-2018	✓
TB108								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
RB108,	FB108,	07-May-2018	09-May-2018	21-May-2018	✓	09-May-2018	21-May-2018	✓
TB108								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1807528**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 8
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 26-Apr-2018 15:00
Date Analysis Commenced : 08-May-2018
Issue Date : 10-May-2018 11:38



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- This is a rebatch of EM1806904.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID		NEL-ENV-BH030_0.0-0.1	----	----	----	----
Client sampling date / time			23-Apr-2018 00:00		----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1807528-001	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	5.9	----	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	6.4	----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	5	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	22	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	20	----	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	48	----	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	59	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	340	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH030_0.0-0.1	----	----	----	----
Client sampling date / time					23-Apr-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1807528-001	-----	-----	-----	-----
Result						----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH030_0.0-0.1	----	----	----	----
Client sampling date / time					23-Apr-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1807528-001	-----	-----	-----	-----
Result						----	----	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg		<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

NEL-ENV-BH030_0.0-0.1

Client sampling date / time				23-Apr-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1807528-001	-----	-----	-----	-----
Result				----	----	----	----	----

EP075B: Polynuclear Aromatic Hydrocarbons - Continued

^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----
----------------------------	------	-----	-------	-----	------	------	------	------

EP075I: Organochlorine Pesticides

alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH030_0.0-0.1	----	----	----	----
Client sampling date / time					23-Apr-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1807528-001	-----	-----	-----	-----
Result						----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)		----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction		----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction		----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction		----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)		----	50	mg/kg	<50	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)		----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX		10	mg/kg	<10	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3		0.1	%	108	----	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0		0.1	%	79.9	----	----	----	----
Toluene-D8	2037-26-5		0.1	%	79.1	----	----	----	----
4-Bromofluorobenzene	460-00-4		0.1	%	84.0	----	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3		0.025	%	104	----	----	----	----
2-Chlorophenol-D4	93951-73-6		0.025	%	85.7	----	----	----	----
2,4,6-Tribromophenol	118-79-6		0.025	%	106	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0		0.025	%	97.0	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1		0.025	%	106	----	----	----	----
2-Fluorobiphenyl	321-60-8		0.025	%	118	----	----	----	----
Anthracene-d10	1719-06-8		0.025	%	93.6	----	----	----	----
4-Terphenyl-d14	1718-51-0		0.025	%	105	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

re-batch
em180604
Sample 18
tray HS 780

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Tuesday, 8 May 2018 5:02 PM
To: Shirley LeCornu
Cc: vanesa.menon@aecom.com
Subject: FW: SRN for ALS Workorder : EM1806904 | Overall Description: North East Link - Contamination
Attachments: EM1806904_0_SRN_180427101108.pdf; EM1806904_ESRN_ESDAT_0.Header.xml; EM1806904_COC.pdf

Hi Shirley,

Could you please run the following sample that was put on hold (row #18 on the attached COC)?

Sample ID: NEL-ENV-BH030_0-0.1
Analysis: IWRG621
Notes: Some analysis might be past their hold time but that is okay.
TAT: Regular
Project#: 31350060910

MS:1749
sus/s.

Vanesa, please let us know if you require a faster turn-around-time.

Please let me know if you require anything else.

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

Environmental Division
Melbourne
Work Order Reference
EM1807528



Telephone : +61-3-8549 9800

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>

Sent: Friday, 27 April 2018 10:11 AM

To: Kory Auch <Kory.Auch@ghd.com>

Subject: SRN for ALS Workorder : EM1806904 | Overall Description: North East Link - Contamination



Deliverables for ALS Workorder EM1806904

Project: 31350060910

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1807528

<p>Client : GHD PTY LTD</p> <p>Contact : KORY AUCH</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : kory.auch@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : ----</p> <p>Sampler :</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 3</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

Date Samples Received : 26-Apr-2018 15:00	Issue Date : 09-May-2018
Client Requested Due Date : 10-May-2018	Scheduled Reporting Date : 10-May-2018

Delivery Details

Mode of Delivery : Samples On Hand	Security Seal : Not Available
No. of coolers/boxes : ----	Temperature : ----
Receipt Detail :	No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1806904.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM1807528-001 : [23-Apr-2018] : NEL-ENV-BH030_0.0-0.1

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1807528-001	23-Apr-2018 00:00	NEL-ENV-BH030_0.0-0.1	✓	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA001: pH in soil using a 0.01M CaCl2 extract							
NEL-ENV-BH030_0.0	Soil Glass Jar - Unpreserved	30-Apr-2018	09-May-2018	26-Apr-2018	✓	08-May-2018	✗
EA055: Moisture Content							
NEL-ENV-BH030_0.0	Soil Glass Jar - Unpreserved	----	07-May-2018	26-Apr-2018	✓	08-May-2018	✗
EK026SF: Total Cyanide by Segmented Flow Analyser							
NEL-ENV-BH030_0.0	Soil Glass Jar - Unpreserved	07-May-2018	22-May-2018	26-Apr-2018	✓	08-May-2018	✗
EP066-EM: PCB - VIC EPA 448.3 Screen							
NEL-ENV-BH030_0.0	Soil Glass Jar - Unpreserved	07-May-2018	17-Jun-2018	26-Apr-2018	✓	08-May-2018	✗
EP071-EM: TRH - Semivolatile Fraction							
NEL-ENV-BH030_0.0	Soil Glass Jar - Unpreserved	07-May-2018	17-Jun-2018	26-Apr-2018	✓	08-May-2018	✗
EP074-UT: Volatile Organic Compounds - Ultra-trace							
NEL-ENV-BH030_0.0	Soil Glass Jar - Unpreserved	30-Apr-2018	30-Apr-2018	26-Apr-2018	✓	08-May-2018	✗
EP075-EM: Semivolatile Organic Compounds - Waste Classification							
NEL-ENV-BH030_0.0	Soil Glass Jar - Unpreserved	07-May-2018	17-Jun-2018	26-Apr-2018	✓	08-May-2018	✗

QUALITY CONTROL REPORT

Work Order	: EM1807528	Page	: 1 of 9
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 26-Apr-2018
Order number	: ----	Date Analysis Commenced	: 08-May-2018
C-O-C number	: ----	Issue Date	: 10-May-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1625351)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EA001: pH (CaCl2)	----	0.1	pH Unit	5.9	5.9	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1625369)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EA055: Moisture Content	----	0.1	%	6.4	6.2	2.76	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1625415)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	48	40	18.0	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	22	20	8.34	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	20	24	15.5	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	59	60	0.00	0% - 50%		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1625414)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1625342)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1625353)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1625352)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EK040T: Fluoride	16984-48-8	40	mg/kg	340	330	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1625325)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1625325) - continued									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1625326)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1625326)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1625326)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1625323)							
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1625323) - continued									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1625323)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1625323)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1625323)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Page : 5 of 9
 Work Order : EM1807528
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1625323) - continued									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1625324)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1625326)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1625324)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1625326)									
EM1807528-001	NEL-ENV-BH030_0.0-0.1	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1625415)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	101	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	95.6	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	100	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	101	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	97.1	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	105	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	105	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	82.2	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	94.0	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	103	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1625414)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	80.0	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1625342)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	80.8	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1625353)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	95.5	80	110
EK040T: Fluoride Total (QCLot: 1625352)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	91.8	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1625325)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	110	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1625326)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	97.1	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	97.9	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	99.8	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	97.4	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	98.1	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	97.1	74	114
EP074H: Naphthalene (QCLot: 1625326)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	96.4	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1625326)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	92.4	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	98.8	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1625326) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	105	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	96.9	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	96.8	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	93.2	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	99.0	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	100	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	93.2	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	95.9	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	95.6	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	98.4	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	93.2	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	95.1	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	98.6	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	98.4	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	95.8	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	94.1	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	95.6	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1625323)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	85.6	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	69.2	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	85.5	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	75.3	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	83.3	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	73.5	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	83.4	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	85.1	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	71.9	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1625323)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	70.9	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	84.0	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	74.1	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	68.0	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	83.8	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	97.7	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	91.3	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	78.9	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	86.8	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	70.2	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1625323)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	86.3	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	88.9	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	86.6	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	88.3	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	89.7	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	60.2	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	89.3	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	89.6	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	87.9	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	92.5	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	93.4	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	86.9	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	93.3	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	93.8	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	92.3	55	137
EP075I: Organochlorine Pesticides (QCLot: 1625323)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	87.2	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	86.7	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	88.9	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	88.0	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	90.1	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	88.1	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	88.0	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	91.0	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	91.8	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	92.5	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	92.3	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	88.7	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	92.0	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	78.3	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	71.0	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	90.7	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	91.0	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	92.1	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	88.6	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	90.3	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1625324)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	90.9	73	134



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1625324) - continued								
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	110	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	98.4	77	116
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1625326)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	101	69	114
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1625324)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	94.5	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	105	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	93.0	68	124
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1625326)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	100	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
	X							

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1807528**

Page : 1 of 9

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **KORY AUCH**

Telephone : +61-3-8549 9630

Project : 31350060910

Date Samples Received : 26-Apr-2018

Site : ----

Issue Date : 10-May-2018

Sampler : ----

No. of samples received : 1

Order number : ----

No. of samples analysed : 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

Matrix: SOIL

[illegible]



Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Analysis Holding Time						
Soil Glass Jar - Unpreserved NEL-ENV-BH030_0.0-0.1	08-May-2018	30-Apr-2018	8	09-May-2018	30-Apr-2018	9

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Hexavalent Chromium by Alkaline Digestion and DA Finish	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	09-May-2018	30-Apr-2018	✖	09-May-2018	09-May-2018	✔
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	----	----	----	08-May-2018	07-May-2018	✖
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	09-May-2018	20-Oct-2018	✔	09-May-2018	20-Oct-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	09-May-2018	21-May-2018	✓	10-May-2018	21-May-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	21-May-2018	✓	09-May-2018	15-May-2018	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	07-May-2018	✗	09-May-2018	22-May-2018	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	21-May-2018	✓	10-May-2018	21-May-2018	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	07-May-2018	✗	09-May-2018	17-Jun-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	30-Apr-2018	✗	09-May-2018	30-Apr-2018	✗
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	30-Apr-2018	✗	09-May-2018	30-Apr-2018	✗
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	30-Apr-2018	✗	09-May-2018	30-Apr-2018	✗
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	07-May-2018	✗	09-May-2018	17-Jun-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	07-May-2018	✗	09-May-2018	17-Jun-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	07-May-2018	✗	09-May-2018	17-Jun-2018	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	07-May-2018	✗	09-May-2018	17-Jun-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	07-May-2018	✗	09-May-2018	17-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	30-Apr-2018	✗	09-May-2018	30-Apr-2018	✗

Page : 5 of 9
 Work Order : EM1807528
 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	07-May-2018	✖	09-May-2018	17-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH030_0.0-0.1	23-Apr-2018	08-May-2018	30-Apr-2018	✖	09-May-2018	30-Apr-2018	✖



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	1	200.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard

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 Work Order : EM1807528
 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CERTIFICATE OF ANALYSIS

Work Order : **EM1807708**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **3**
No. of samples analysed : **3**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 26-Apr-2018 15:00
Date Analysis Commenced : 11-May-2018
Issue Date : 15-May-2018 16:26



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1806904.



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-ENV-BH028_1.5-1. 6	NEL-ENV-BH030_0.9-1. 0	NEL-ENV-BH025_1.0-1. 1	----	----
Client sampling date / time				24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1807708-001	EM1807708-002	EM1807708-003	-----	-----
				Result	Result	Result	----	----
EG005C: Leachable Metals by ICPAES								
Nickel	7440-02-0	0.1	mg/L	0.1	<0.1	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	----	0.1	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH028_1.5-1. 6	NEL-ENV-BH030_0.9-1. 0	NEL-ENV-BH025_1.0-1. 1	----	----
Client sampling date / time				24-Apr-2018 00:00	24-Apr-2018 00:00	24-Apr-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1807708-001	EM1807708-002	EM1807708-003	-----	-----
				Result	Result	Result	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	8.4	8.0	8.8	----	----
After HCl pH	----	0.1	pH Unit	1.4	1.3	1.4	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	----	----
Final pH	----	0.1	pH Unit	5.0	4.9	5.0	----	----

Rebatch

Client / Client code: GHD

Project: 31350060910

Project Manger: KORY AUCH, VANESA MENON

Date /time sample rec: 26/4 @ 3pm

Date/time Instructions rec: 9/5 @ 4:11pm

Due date: STD

Due date surcharge:

CS Contact:

Shirley

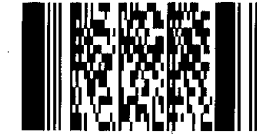
Additional Information:

Environmental Division

Melbourne

Work Order Reference

EM1807708



Telephone : + 61-3-8549 3600

MS - 1799 - 1800
VP 11/5/16

SCANNED

[illegible]

Shirley LeCornu

From: Menon, Venesa <venesa.menon@aecom.com>
Sent: Wednesday, 9 May 2018 4:11 PM
To: Shirley LeCornu
Cc: Rosli, Nazuha; Davidson, Mark (Melbourne)
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1806904 | Overall Description: North East Link - Contamination

Hi Shirley,

Can we please perform a leachability test on the following analytes/samples:

- Nickel for NEL-ENV-BH028_1.5-1.6 and NEL-ENV-BH030_0.9-1.0
- Flouride for NEL-ENV-025_1.0-1.1 and NEL-ENV-BH028_1.5-1.6

At standard TAT.

Thank you.

Regards,
Venesa Menon
Senior Chemical Engineer
D +61 3 9653 8759 M +61 434 841 716
venesa.menon@aecom.com

AECOM
Collins Square, Level 10, Tower Two, 727 Collins Street, Melbourne, VIC 3008
T +61 3 9653 1234
aecom.com

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From: Rosli, Nazuha
Sent: Thursday, 3 May 2018 3:46 PM
To: Menon, Venesa
Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1806904 | Overall Description: North East Link - Contamination

Thanks.

Nazuha Rosli
Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1807708

<p>Client : GHD PTY LTD</p> <p>Contact : KORY AUCH</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : kory.auch@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number :</p> <p>C-O-C number : ----</p> <p>Site : North East Link - Contamination</p> <p>Sampler :</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 3</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

<p>Date Samples Received : 26-Apr-2018 15:00</p> <p>Client Requested Due : 16-May-2018</p> <p>Date :</p>	<p>Issue Date : 11-May-2018</p> <p>Scheduled Reporting Date : 16-May-2018</p>
----------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------

Delivery Details

<p>Mode of Delivery : Samples On Hand</p> <p>No. of coolers/boxes : ----</p> <p>Receipt Detail :</p>	<p>Security Seal : Not Available</p> <p>Temperature : ----</p> <p>No. of samples received / analysed : 3 / 3</p>
------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1806904.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM1807708-001 : [24-Apr-2018] : NEL-ENV-BH028_1.5-1.6
EM1807708-002 : [24-Apr-2018] : NEL-ENV-BH030_0.9-1.0
EM1807708-003 : [24-Apr-2018] : NEL-ENV-BH025_1.0-1.1

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EK040-P Fluoride (PCT)	SOIL - EN60a ASLP Leachate Procedure
EM1807708-001	24-Apr-2018 00:00	NEL-ENV-BH028_1.5-1.6	✓	✓	✓
EM1807708-002	24-Apr-2018 00:00	NEL-ENV-BH030_0.9-1.0	✓		✓
EM1807708-003	24-Apr-2018 00:00	NEL-ENV-BH025_1.0-1.1		✓	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: SOIL

Evaluation: ✖ = Holding time breach ; ✓ = Within holding time.

Method	Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
					Date	Evaluation	Date	Evaluation
EN60a: ASLP for Non & Semivolatile Analytes								
NEL-ENV-BH025_1.0	Non-Volatile Leach: 14 day HT(€		08-May-2018	----	26-Apr-2018	✓	09-May-2018	✗
NEL-ENV-BH028_1.5	Non-Volatile Leach: 14 day HT(€		08-May-2018	----	26-Apr-2018	✓	09-May-2018	✗

ALL ACCOUNTS

- Email ap-fss@ghd.com

- *AU Certificate of Analysis - NATA (COA)

- [illegible]

- *AU Certificate of Analysis - NATA (COA)

- [illegible]

- *AU Certificate of Analysis - NATA (COA)

- [illegible]

QUALITY CONTROL REPORT

Work Order	: EM1807708	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 26-Apr-2018
Order number	: ----	Date Analysis Commenced	: 11-May-2018
C-O-C number	: ----	Issue Date	: 15-May-2018
Sampler	: ----		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Recovery Limits (%)</i>
EG005C: Leachable Metals by ICPAES (QC Lot: 1637387)									
EM1807521-001	Anonymous	EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1807531-004	Anonymous	EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EG005C: Leachable Metals by ICPAES (QC Lot: 1640760)									
EM1807532-001	Anonymous	EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1807727-001	Anonymous	EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1637348)									
ES1812492-011	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1637387)								
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	91.5	86	111
EG005C: Leachable Metals by ICPAES (QCLot: 1640760)								
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	94.5	86	111
EK040P: Fluoride by PC Titrator (QCLot: 1637348)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	101	85	112

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1637387)							
EM1807521-002	Anonymous	EG005C: Nickel	7440-02-0	1 mg/L	97.9	88	116
EG005C: Leachable Metals by ICPAES (QCLot: 1640760)							
EM1807532-002	Anonymous	EG005C: Nickel	7440-02-0	1 mg/L	98.2	88	116
EK040P: Fluoride by PC Titrator (QCLot: 1637348)							
ES1812492-018	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	82.4	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1807708	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 26-Apr-2018
Site	: North East Link - Contamination	Issue Date	: 15-May-2018
Sampler	: ----	No. of samples received	: 3
Order number	:	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EN60: ASLP Leaching Procedure						
Non-Volatile Leach: 14 day HT(e.g. SV organics) NEL-ENV-BH028_1.5-1.6, NEL-ENV-BH025_1.0-1.1	11-May-2018	08-May-2018	3	----	----	----

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN60a) NEL-ENV-BH028_1.5-1.6, NEL-ENV-BH025_1.0-1.1	24-Apr-2018	11-May-2018	08-May-2018	✖	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-ENV-BH030_0.9-1.0	24-Apr-2018	14-May-2018	21-Oct-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-ENV-BH028_1.5-1.6	11-May-2018	14-May-2018	07-Nov-2018	✓	14-May-2018	07-Nov-2018	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-ENV-BH030_0.9-1.0	14-May-2018	15-May-2018	10-Nov-2018	✓	15-May-2018	10-Nov-2018	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) NEL-ENV-BH028_1.5-1.6, NEL-ENV-BH025_1.0-1.1	11-May-2018	----	----	----	14-May-2018	08-Jun-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Fluoride by PC Titrator	EK040P	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	4	17	23.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Fluoride by PC Titrator	EK040P	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Fluoride by PC Titrator	EK040P	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Fluoride by PC Titrator	EK040P	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	17	11.76	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	SOIL	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1807877**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **SH/MLM**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **9**
No. of samples analysed : **5**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 14-May-2018 16:30
Date Analysis Commenced : 21-May-2018
Issue Date : 28-May-2018 17:41



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH159_0.2m	NEL-BH159_1.5m	----	----	----
Client sampling date / time					14-May-2018 00:00	14-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1807877-001	EM1807877-004	-----	-----	-----
					Result	Result	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.5	7.3	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		22.5	27.5	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		8	7	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		18	16	----	----	----
Lead	7439-92-1	5	mg/kg		24	17	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		32	26	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		46	35	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		430	360	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH159_0.2m	NEL-BH159_1.5m	----	----	----
Client sampling date / time					14-May-2018 00:00	14-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1807877-001	EM1807877-004	-----	-----	-----
				Result	Result		----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH159_0.2m	NEL-BH159_1.5m	----	----	----
Client sampling date / time					14-May-2018 00:00	14-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1807877-001	EM1807877-004	-----	-----	-----
					Result	Result	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH159_0.2m	NEL-BH159_1.5m	----	----	----
Client sampling date / time				14-May-2018 00:00	14-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1807877-001	EM1807877-004	-----	-----	-----
				Result	Result	----	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH159_0.2m	NEL-BH159_1.5m	----	----	----
Client sampling date / time					14-May-2018 00:00	14-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1807877-001	EM1807877-004	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		98.6	115	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		81.5	79.3	----	----	----
Toluene-D8	2037-26-5	0.1	%		75.1	72.8	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		77.6	77.1	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		92.0	86.7	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		75.0	68.3	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		74.7	73.0	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		76.7	70.3	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		76.4	68.1	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		84.8	82.4	----	----	----
Anthracene-d10	1719-06-8	0.025	%		95.4	96.4	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		108	106	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB110	FB110	TB110	----	----
Client sampling date / time				14-May-2018 00:00	14-May-2018 00:00	14-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1807877-005	EM1807877-006	EM1807877-007	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.36	4.97	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.2	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB110	FB110	TB110	----	----
Client sampling date / time					14-May-2018 00:00	14-May-2018 00:00	14-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1807877-005	EM1807877-006	EM1807877-007	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB110	FB110	TB110	----	----
Client sampling date / time				14-May-2018 00:00	14-May-2018 00:00	14-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1807877-005	EM1807877-006	EM1807877-007	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB110	FB110	TB110	----	----
Client sampling date / time					14-May-2018 00:00	14-May-2018 00:00	14-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1807877-005	EM1807877-006	EM1807877-007	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		76.0	71.6	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		103	88.6	----	----	----
Toluene-D8	2037-26-5	5	%		102	99.0	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		104	87.9	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		32.3	32.4	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		76.0	74.6	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		56.8	54.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		86.4	84.9	----	----	----
Anthracene-d10	1719-06-8	1.0	%		87.4	84.1	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		96.6	91.8	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB110	FB110	TB110	----	----
Client sampling date / time					14-May-2018 00:00	14-May-2018 00:00	14-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1807877-005	EM1807877-006	EM1807877-007	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		38.8	45.7	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		62.8	93.8	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		52.3	68.1	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		72.9	88.9	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		73.0	94.8	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		79.6	115	----	----	----
Anthracene-d10	1719-06-8	0.25	%		70.4	95.3	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		79.4	108	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		102	88.8	102	----	----
Toluene-D8	2037-26-5	2	%		95.4	91.1	96.2	----	----
4-Bromofluorobenzene	460-00-4	2	%		99.5	97.2	98.5	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

SCANNED

Page 1 of 1

[illegible]

From: Graeme Jablonskas
Sent: Monday, 21 May 2018 8:20 AM
To: COC Melbourne
Subject: FW: ON HOLD-EM1807877 AND EM1807878-GHD-NORTH EAST LINK CONTAMINATION

See below

Kind Regards

Graeme Jablonskas
Senior Project Manager – Springvale
Environmental



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From: Rosli, Nazuha [mailto:nazuha.rosli@aecom.com]
Sent: Monday, 21 May 2018 8:06 AM
To: Melbourne Enviro Services <MelbourneEnviroSer@alsglobal.com>
Cc: Menon, Venesa <venesa.menon@aecom.com>; Shirley LeCornu <shirley.lecornu@alsglobal.com>
Subject: RE: ON HOLD-EM1807877 AND EM1807878-GHD-NORTH EAST LINK CONTAMINATION

Hi Shirley,

Please analyse:

1. NEL-BH191_0.5m = IWRG621
2. NEL-BH191_1.0m = IWRG621
3. NEL-BH159_0.2m = IWRG621
4. NEL-BH159_1.5m = IWRG621
5. QC1003 = IWRG621
6. QC2003 = IWRG621 (triplicate - forward to Eurofins)
7. RB109 = IWRG621 water equivalent
8. RB110 = IWRG621 water equivalent
10. TB109 = Volatile TPH/BTEX
11. TB110 = Volatile TPH/BTEX
12. FB109 = IWRG621 water equivalent
13. FB110 = IWRG621 water equivalent

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1807877**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link - Contamination		
Sampler	: SH/MLM		

Dates

Date Samples Received	: 14-May-2018 16:30	Issue Date	: 21-May-2018
Client Requested Due Date	: 28-May-2018	Scheduled Reporting Date	: 28-May-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 2.7°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 9 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB110	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB110	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB110	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB110	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB110	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB110	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1807877-001	14-May-2018 00:00	NEL-BH159_0.2m		✓	✓
EM1807877-002	14-May-2018 00:00	NEL-BH159_0.5m	✓		
EM1807877-003	14-May-2018 00:00	NEL-BH159_1.0m	✓		
EM1807877-004	14-May-2018 00:00	NEL-BH159_1.5m		✓	✓
EM1807877-008	14-May-2018 00:00	NEL-BH159_2.4m	✓		
EM1807877-009	14-May-2018 00:00	NEL-BH159_3.4m	✓		

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1807877-005	14-May-2018 00:00	RB110	✓	
EM1807877-006	14-May-2018 00:00	FB110	✓	
EM1807877-007	14-May-2018 00:00	TB110		✓

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1807877	Page	: 1 of 18
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 14-May-2018
Order number	:	Date Analysis Commenced	: 21-May-2018
C-O-C number	: ----	Issue Date	: 28-May-2018
Sampler	: SH/MLM		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 9		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1658971)									
EM1807877-001	NEL-BH159_0.2m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.5	6.5	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1663123)									
EM1807877-001	NEL-BH159_0.2m	EA055: Moisture Content	----	0.1	%	22.5	24.3	7.92	0% - 20%
EM1808244-011	Anonymous	EA055: Moisture Content	----	0.1	%	8.5	8.4	0.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1663430)									
EM1807877-001	NEL-BH159_0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	32	34	4.85	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	20	8.45	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	24	24	4.22	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	46	50	7.60	No Limit
EM1808244-015	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	9	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	16	49.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	18	30	51.4	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1663430) - continued									
EM1808244-015	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	9	8	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1663429)									
EM1807877-001	NEL-BH159_0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1808244-015	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1673328)									
EM1807877-001	NEL-BH159_0.2m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808244-022	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1668916)									
EM1807877-001	NEL-BH159_0.2m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1808252-007	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1662956)									
EM1807877-001	NEL-BH159_0.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	430	390	9.71	0% - 50%
EM1808302-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	150	140	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1667798)									
EM1807877-001	NEL-BH159_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1808303-007	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1658962)									
EM1807877-001	NEL-BH159_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1658962)									
EM1807877-001	NEL-BH159_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1658962)									
EM1807877-001	NEL-BH159_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1658962) - continued									
EM1807877-001	NEL-BH159_0.2m	EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1667796)									
EM1807877-001	NEL-BH159_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1667796)									
EM1807877-001	NEL-BH159_0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1667796) - continued									
EM1808303-007	Anonymous	EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1667796)									
EM1807877-001	NEL-BH159_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1667796) - continued									
EM1808303-007	Anonymous	EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1667796)									
EM1807877-001	NEL-BH159_0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1667796) - continued									
EM1808303-007	Anonymous	EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1658962)									
EM1807877-001	NEL-BH159_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1667797)									
EM1807877-001	NEL-BH159_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1808303-007	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1658962)									
EM1807877-001	NEL-BH159_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1667797)									
EM1807877-001	NEL-BH159_0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1808303-007	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1662693)									
EM1807877-006	FB110	EA005-P: pH Value	----	0.01	pH Unit	4.97	5.31	6.61	0% - 20%
EM1808196-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.61	6.54	1.06	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1669106)									
EM1808244-042	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1669107)									
EM1808348-001	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.002	78.8	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 1669105)									
EM1808252-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1807868-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1660419)									
EM1807877-005	RB110	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1663434)									
EM1807877-005	RB110	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1808293-002	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1662694)									
EM1807877-006	FB110	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1662600)									
EM1808278-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1808288-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1662600)									
EM1808278-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1808288-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1662600) - continued									
EM1808288-001	Anonymous	EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1662600)									
EM1808278-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1808288-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1662600)									
EM1808278-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1808288-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1662601)									
EM1808278-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	20000	20600	2.84	0% - 50%
EM1808288-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1662601)									
EM1808278-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	19400	19900	2.48	No Limit
EM1808288-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1662601)									
EM1808278-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	15500	15800	2.27	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	15	17	13.3	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	1230	1280	4.72	0% - 50%
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	26	28	10.7	0% - 50%
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	6	7	0.00	No Limit
EM1808288-001	Anonymous	EP080: Napthalene	91-20-3	5	µg/L	379	388	2.20	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EP080: Napthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit		



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1663430)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	99.5	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	95.8	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	101	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	89.7	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	101	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	104	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	99.1	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.5	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	98.2	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	97.3	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1663429)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	86.4	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1673328)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	80.2	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1668916)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	91.4	80	110
EK040T: Fluoride Total (QCLot: 1662956)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	89.5	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1667798)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	107	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1658962)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	88.7	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	89.2	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	89.0	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	88.9	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	91.1	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	90.2	74	114
EP074H: Naphthalene (QCLot: 1658962)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	87.3	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1658962)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	74.6	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	80.7	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1658962) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	87.8	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.8	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	87.3	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.2	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	85.2	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	90.9	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	86.9	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	87.8	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	97.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	85.4	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	91.7	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	98.3	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	77.2	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	91.3	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.2	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	90.5	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	84.3	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1667796)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	108	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	79.9	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	93.9	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	86.6	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	93.6	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	81.6	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	92.2	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	95.3	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	79.8	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1667796)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	101	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	104	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	88.9	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	81.6	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	94.3	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	100	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	97.8	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	84.8	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	97.6	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	87.3	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1667796)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	97.3	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	104	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	102	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	100	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	106	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	70.8	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	109	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	107	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	106	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	110	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	112	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	104	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	116	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	114	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	117	55	137
EP075I: Organochlorine Pesticides (QCLot: 1667796)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	99.1	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	97.8	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	101	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	99.1	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	103	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	102	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	104	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	105	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	108	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	107	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	106	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	105	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	108	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	97.2	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	113	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	107	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	108	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	111	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	110	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	114	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1658962)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	85.3	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1669106)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.0	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.4	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.8	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	88.2	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	89.8	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.7	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.4	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	91.3	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	92.0	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1669107)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	100	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1669105)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	100	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1660419)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	102	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1663434)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	94.7	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1662694)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	101	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1659014)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	75.9	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1662600)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1662600) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	98.7	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1662600)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	94.2	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	96.3	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	102	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	97.1	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	98.8	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	95.8	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	92.6	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	102	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	98.2	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	104	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	99.3	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	99.3	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	104	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	100	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1662600)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	100.0	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	93.9	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	95.3	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	98.8	62	119
EP074G: Trihalomethanes (QCLot: 1662600)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	99.2	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1659015)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	81.6	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	80.3	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	82.4	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	83.2	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	82.5	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	95.2	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	84.2	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	81.8	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	81.6	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	81.7	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	83.2	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	86.9	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	84.6	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1659015) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	80.7	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	81.0	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	83.1	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1659007)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	100	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	88.4	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	106	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	107	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	116	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	115	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	114	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	113	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	109	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1659007)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	40.6	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	95.1	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	83.9	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	89.1	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	106	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	113	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	58.1	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	95.3	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	102	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	134	32	135
EP075I: Organochlorine Pesticides (QCLot: 1659007)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	112	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	112	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	110	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	113	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	114	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	115	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	112	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	108	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	114	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1659016)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	91.3	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	90.2	60	133



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1673328) - continued							
EM1807877-004	NEL-BH159_1.5m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	58.2	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1668916)							
EM1807877-004	NEL-BH159_1.5m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	93.4	77	113
EK040T: Fluoride Total (QCLot: 1662956)							
EM1807877-004	NEL-BH159_1.5m	EK040T: Fluoride	16984-48-8	400 mg/kg	94.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1667798)							
EM1808218-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	116	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1658962)							
EM1807877-004	NEL-BH159_1.5m	EP074-UT: Benzene	71-43-2	2 mg/kg	89.0	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	88.2	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1658962)							
EM1807877-004	NEL-BH159_1.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	87.3	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	83.7	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	89.6	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1667796)							
EM1807877-004	NEL-BH159_1.5m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	79.4	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	62.4	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	32.6	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1667796)							
EM1807877-004	NEL-BH159_1.5m	EP075-EM: Phenol	108-95-2	1 mg/kg	75.5	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	59.1	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1667796)							
EM1807877-004	NEL-BH159_1.5m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	81.4	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	82.1	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1658962)							
EM1807877-004	NEL-BH159_1.5m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	75.7	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1667797)							
EM1808218-003	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	84.9	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	91.4	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	82.1	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1658962)							
EM1807877-004	NEL-BH159_1.5m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	74.5	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1667797)							
EM1808218-003	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	84.2	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	87.8	67	121

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 Work Order : EM1807877
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1667797) - continued							
EM1808218-003	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	79.0	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 1669105)							
EM1807868-003	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	80.3	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1660419)							
EM1807877-006	FB110	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	101	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1663434)							
EM1807877-006	FB110	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	93.5	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1662694)							
EM1808184-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	98.0	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1662600)							
EM1808249-009	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	83.2	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	87.3	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1662600)							
EM1808249-009	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	99.2	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1662601)							
EM1808249-009	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	75.0	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1662601)							
EM1808249-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	74.0	44	122
EP080: BTEXN (QCLot: 1662601)							
EM1808249-009	Anonymous	EP080: Benzene	71-43-2	20 µg/L	98.9	68	130
		EP080: Toluene	108-88-3	20 µg/L	92.7	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1807877	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 14-May-2018
Site	: North East Link - Contamination	Issue Date	: 28-May-2018
Sampler	: SH/MLM	No. of samples received	: 9
Order number	:	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EP074A: Monocyclic Aromatic Hydrocarbons						
Soil Glass Jar - Unpreserved NEL-BH159_0.2m, NEL-BH159_1.5m	----	----	----	22-May-2018	21-May-2018	1
EP074H: Naphthalene						
Soil Glass Jar - Unpreserved NEL-BH159_0.2m, NEL-BH159_1.5m	----	----	----	22-May-2018	21-May-2018	1
EP074I: Volatile Halogenated Compounds						
Soil Glass Jar - Unpreserved NEL-BH159_0.2m, NEL-BH159_1.5m	----	----	----	22-May-2018	21-May-2018	1
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved NEL-BH159_0.2m, NEL-BH159_1.5m	----	----	----	22-May-2018	21-May-2018	1
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Soil Glass Jar - Unpreserved NEL-BH159_0.2m, NEL-BH159_1.5m	----	----	----	22-May-2018	21-May-2018	1

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RB110, FB110	----	----	----	22-May-2018	14-May-2018	8

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Dissolved Metals by ICP-MS - Suite A	1	16	6.25	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Dissolved Metals by ICP-MS - Suite A	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS) - Continued					
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Evaluation	Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction			Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH159_0.2m, NEL-BH159_1.5m	14-May-2018	21-May-2018	21-May-2018	✓	21-May-2018	21-May-2018	✓	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH159_0.2m, NEL-BH159_1.5m	14-May-2018	----	----	----	22-May-2018	28-May-2018	✓	
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH159_0.2m, NEL-BH159_1.5m	14-May-2018	23-May-2018	10-Nov-2018	✓	23-May-2018	10-Nov-2018	✓	
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH159_0.2m, NEL-BH159_1.5m	14-May-2018	23-May-2018	11-Jun-2018	✓	24-May-2018	11-Jun-2018	✓	
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH159_0.2m, NEL-BH159_1.5m	14-May-2018	24-May-2018	11-Jun-2018	✓	24-May-2018	31-May-2018	✓	
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH159_0.2m, NEL-BH159_1.5m	14-May-2018	23-May-2018	28-May-2018	✓	24-May-2018	06-Jun-2018	✓	
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH159_0.2m, NEL-BH159_1.5m	14-May-2018	22-May-2018	11-Jun-2018	✓	23-May-2018	11-Jun-2018	✓	
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH159_0.2m, NEL-BH159_1.5m	14-May-2018	23-May-2018	28-May-2018	✓	23-May-2018	02-Jul-2018	✓	
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH159_0.2m, NEL-BH159_1.5m	14-May-2018	21-May-2018	21-May-2018	✓	22-May-2018	21-May-2018	✗	



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH159_0.2m,	NEL-BH159_1.5m	14-May-2018	21-May-2018	21-May-2018	✓	22-May-2018	21-May-2018	✗
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH159_0.2m,	NEL-BH159_1.5m	14-May-2018	21-May-2018	21-May-2018	✓	22-May-2018	21-May-2018	✗
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH159_0.2m,	NEL-BH159_1.5m	14-May-2018	23-May-2018	28-May-2018	✓	23-May-2018	02-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH159_0.2m,	NEL-BH159_1.5m	14-May-2018	23-May-2018	28-May-2018	✓	23-May-2018	02-Jul-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH159_0.2m,	NEL-BH159_1.5m	14-May-2018	23-May-2018	28-May-2018	✓	23-May-2018	02-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH159_0.2m,	NEL-BH159_1.5m	14-May-2018	23-May-2018	28-May-2018	✓	23-May-2018	02-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH159_0.2m,	NEL-BH159_1.5m	14-May-2018	21-May-2018	21-May-2018	✓	22-May-2018	21-May-2018	✗
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH159_0.2m,	NEL-BH159_1.5m	14-May-2018	23-May-2018	28-May-2018	✓	23-May-2018	02-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH159_0.2m,	NEL-BH159_1.5m	14-May-2018	21-May-2018	21-May-2018	✓	22-May-2018	21-May-2018	✗
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH159_0.2m,	NEL-BH159_1.5m	14-May-2018	23-May-2018	28-May-2018	✓	23-May-2018	02-Jul-2018	✓

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) RB110, FB110	14-May-2018	----	----	----	22-May-2018	14-May-2018	✘
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) RB110, FB110	14-May-2018	----	----	----	24-May-2018	10-Nov-2018	✔
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) RB110, FB110	14-May-2018	----	----	----	28-May-2018	28-May-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB110,	FB110	14-May-2018	----	----	----	21-May-2018	11-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) RB110,	FB110	14-May-2018	----	----	----	22-May-2018	28-May-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB110,	FB110	14-May-2018	----	----	----	22-May-2018	11-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB110,	FB110	14-May-2018	21-May-2018	21-May-2018	✓	23-May-2018	30-Jun-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB110,	FB110	14-May-2018	22-May-2018	28-May-2018	✓	22-May-2018	28-May-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB110,	FB110	14-May-2018	22-May-2018	28-May-2018	✓	22-May-2018	28-May-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB110,	FB110	14-May-2018	22-May-2018	28-May-2018	✓	22-May-2018	28-May-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB110,	FB110	14-May-2018	22-May-2018	28-May-2018	✓	22-May-2018	28-May-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB110,	FB110	14-May-2018	21-May-2018	21-May-2018	✓	23-May-2018	30-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB110,	FB110	14-May-2018	21-May-2018	21-May-2018	✓	23-May-2018	30-Jun-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB110,	FB110	14-May-2018	21-May-2018	21-May-2018	✓	23-May-2018	30-Jun-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB110,	FB110	14-May-2018	21-May-2018	21-May-2018	✓	23-May-2018	30-Jun-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB110,	FB110	14-May-2018	21-May-2018	21-May-2018	✓	23-May-2018	30-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB110, TB110	FB110,	14-May-2018	22-May-2018	28-May-2018	✓	22-May-2018	28-May-2018	✓

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 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
RB110,	FB110	14-May-2018	21-May-2018	21-May-2018	✓	23-May-2018	30-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RB110,	FB110,	14-May-2018	22-May-2018	28-May-2018	✓	22-May-2018	28-May-2018	✓
TB110								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
RB110,	FB110,	14-May-2018	22-May-2018	28-May-2018	✓	22-May-2018	28-May-2018	✓
TB110								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ***** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	0	16	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1808218**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **MLM, SH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **11**
No. of samples analysed : **7**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 18-May-2018 11:55
Date Analysis Commenced : 22-May-2018
Issue Date : 28-May-2018 17:41



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH180_0.1m	NEL-BH180_1.0m	NEL-BH144_0.1m	NEL-BH144_1.0m	----
Client sampling date / time					17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1808218-001	EM1808218-003	EM1808218-005	EM1808218-007	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		4.4	5.5	5.0	5.4	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		15.3	21.5	24.7	20.2	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	5	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		10	9	9	9	----
Lead	7439-92-1	5	mg/kg		12	11	20	9	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		14	16	11	16	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		39	30	37	30	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		220	320	190	300	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH180_0.1m	NEL-BH180_1.0m	NEL-BH144_0.1m	NEL-BH144_1.0m	----
Client sampling date / time					17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1808218-001	EM1808218-003	EM1808218-005	EM1808218-007	-----
					Result	Result	Result	Result	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH180_0.1m	NEL-BH180_1.0m	NEL-BH144_0.1m	NEL-BH144_1.0m	----
Client sampling date / time				17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	----	
Compound	CAS Number	LOR	Unit	EM1808218-001	EM1808218-003	EM1808218-005	EM1808218-007	-----	
				Result	Result	Result	Result	----	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	----	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	----	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	----	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	----	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	----	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	----	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	----	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH180_0.1m	NEL-BH180_1.0m	NEL-BH144_0.1m	NEL-BH144_1.0m	----
Client sampling date / time					17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1808218-001	EM1808218-003	EM1808218-005	EM1808218-007	-----
				Result	Result	Result	Result	Result	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH180_0.1m	NEL-BH180_1.0m	NEL-BH144_0.1m	NEL-BH144_1.0m	----
Client sampling date / time					17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1808218-001	EM1808218-003	EM1808218-005	EM1808218-007	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		102	112	106	120	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		77.5	86.6	68.5	70.5	----
Toluene-D8	2037-26-5	0.1	%		78.1	89.5	67.1	69.5	----
4-Bromofluorobenzene	460-00-4	0.1	%		72.1	91.6	69.3	69.7	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		83.9	97.6	89.8	102	----
2-Chlorophenol-D4	93951-73-6	0.025	%		68.5	78.6	72.8	82.8	----
2,4,6-Tribromophenol	118-79-6	0.025	%		69.3	69.6	74.9	66.6	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		70.2	81.6	75.6	87.2	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		69.5	79.5	72.9	83.0	----
2-Fluorobiphenyl	321-60-8	0.025	%		76.5	87.9	80.4	93.9	----
Anthracene-d10	1719-06-8	0.025	%		83.8	97.8	92.1	102	----
4-Terphenyl-d14	1718-51-0	0.025	%		96.0	107	104	113	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB111	RB111	FB111	----	----
Client sampling date / time					17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808218-009	EM1808218-010	EM1808218-011	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		----	5.34	5.38	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		----	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		----	<0.0001	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L		----	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L		----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L		----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L		----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L		----	<0.01	<0.01	----	----
Tin	7440-31-5	0.001	mg/L		----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L		----	<0.005	<0.005	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	<0.0001	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		----	<0.01	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		----	<0.004	<0.004	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		----	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		----	<1	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		----	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		----	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		----	<5	<5	----	----
Methylene chloride	75-09-2	5	µg/L		----	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		----	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		----	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		----	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		----	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		----	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L		----	<5	<5	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB111	RB111	FB111	----	----
Client sampling date / time				17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808218-009	EM1808218-010	EM1808218-011	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	----	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	----	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	----	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	----	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	----	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	----	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	----	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	----	<5	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	----	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	----	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	----	<2	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	----	<2	<2	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB111	RB111	FB111	----	----
Client sampling date / time				17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808218-009	EM1808218-010	EM1808218-011	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	----	<2	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	----	<4	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	----	<2	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	----	<2	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	----	<2	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	----	<2	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	----	<2	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	----	<4	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	----	<4	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	----	<4	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	----	<4	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	----	<4	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	----	<100	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	----	<50	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	----	<50	<50	----	----
Dinoseb	88-85-7	50	µg/L	----	<50	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	----	<50	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	----	<0.5	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	----	<0.5	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	----	<0.5	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	<0.5	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	----	<0.5	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB111	RB111	FB111	----	----
Client sampling date / time				17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808218-009	EM1808218-010	EM1808218-011	-----	-----
				Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	<100	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	----	63.9	80.3	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	----	95.7	96.2	----	----
Toluene-D8	2037-26-5	5	%	----	99.4	98.4	----	----
4-Bromofluorobenzene	460-00-4	5	%	----	104	109	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	----	20.0	25.6	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	----	54.4	71.7	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	----	50.3	66.6	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	----	66.7	87.0	----	----
Anthracene-d10	1719-06-8	1.0	%	----	68.4	88.0	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	----	78.6	98.5	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB111	RB111	FB111	----	----
Client sampling date / time					17-May-2018 00:00	17-May-2018 00:00	17-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808218-009	EM1808218-010	EM1808218-011	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		----	23.3	25.2	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		----	67.1	69.7	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		----	52.1	55.6	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		----	68.7	73.3	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		----	74.3	76.5	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		----	68.8	70.4	----	----
Anthracene-d10	1719-06-8	0.25	%		----	78.6	82.6	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		----	85.2	91.3	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		93.4	94.3	94.5	----	----
Toluene-D8	2037-26-5	2	%		85.0	83.3	82.8	----	----
4-Bromofluorobenzene	460-00-4	2	%		99.4	100	102	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111


Job Number		GHD Office		Laboratory:		Address:		Lab Contact:		Container		Analyses Required	
Project		Contact Email		Sample		Type		Number		Volume (mL)		HOLD	
Standard TAT		Quote No./GHD Reference		Composite Sample		Preservative		J: soil jar, B: bag, V: vial, G: glass bottle, P: plastic bottle		Number		Volume (mL)	
Sample I.D.		Date		Time		S: Soil SL: GW: A: Air		Groundwater		Number		Volume (mL)	
NEL-BH180 - 0.1m		17/05/18		Am		S		J		1		250	
NEL-BH180 - 0.5m		"		"		S		J		1		250	
NEL-BH180 - 1.0m		"		"		S		J		1		250	
NEL-BH180 - 1.5m		"		"		S		J		1		250	
NEL-BH144 - 0.1m		"		"		S		J		1		250	
NEL-BH144 - 0.5m		"		"		S		J		1		250	
NEL-BH144 - 1.0m		"		"		S		J		1		250	
NEL-BH144 - 1.5m		"		"		S		J		1		250	
TB III		"		Pm		W		V/G/P		1		X	
RB III		"		Pm		W		V/G/P		8		X	
FB III		"		Pm		W		V/G/P		8		X	

PLEASE NOTE:
 Sign white copy on receipt and release of samples.
 Samples are to be delivered to the Laboratory Address.
 On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact.
 On completion of analyses please return white copy with results.
 Pink copy is returned to the sampler once the courier has signed for the samples.
 E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line.

Results to be provided in ESDAT compatible format

Remarks

Environmental Division
 Melbourne
 Work Order Reference
EM1808218



Telephone : + 61-3-8549 9600

Environmental Division
Melbourne
Work Order Reference
EM1808218



Telephone : + 61-3-8549 9600

[illegible]

Larissa Burns

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Tuesday, 22 May 2018 8:08 AM
To: Larissa Burns
Cc: Menon, Venesa; David Quinn
Subject: RE: ON HOLD-EM1808218-GHD-31/35006/0910-NORTH EAST LINK CONTAMINATION

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Larissa,

Please analyse:

1. NEL-BH180_0.1m = IWRG621
2. NEL-BH180_1.0m = IWRG621
3. NEL-BH144_0.1m = IWRG621
4. NEL-BH144_1.0m = IWRG621
5. RB111 = IWRG621 water equivalent
6. TB111 = Volatile TPH/BTEX
7. FB111 = IWRG621 water equivalent

At standard TAT. Thanks.

Nazuha Rosli
Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
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From: David Quinn [mailto:David.Quinn@ghd.com]
Sent: Monday, 21 May 2018 12:17 PM
To: Rosli, Nazuha
Cc: Menon, Venesa
Subject: FW: ON HOLD-EM1808218-GHD-31/35006/0910-NORTH EAST LINK CONTAMINATION

Hi Nazuha

Can you please respond to Larissa on which samples we would like analysed for BH180 and BH144.

Thanks

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance

GHD

Proudly employee owned

T: 03 8687 8627 | M: 0437 227 626 | V: 318 627 | E: david.quinn@ghd.com
Level 18, 180 Lonsdale Street Melbourne VIC 3000 | www.ghd.com

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Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the *Inside Waste Consultants Review*

Please consider our environment before printing this email

From: Larissa Burns <Larissa.Burns@alsglobal.com>
Sent: Monday, 21 May 2018 12:06 PM
To: David Quinn <David.Quinn@ghd.com>
Subject: ON HOLD-EM1808218-GHD-31/35006/0910-NORTH EAST LINK CONTAMINATION

Good afternoon David,

Please find attached paperwork submitted with samples not marked for analysis. Looks like you've referenced ME/124/18 – Just wondering whether you require specific suites from this quote for these samples?

Please advise how you would like us to proceed at your earliest convenience.

Kind regards,

Larissa Burns
Client Services Officer – Springvale
Environmental



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F +61 3 8549 9601
larissa.burns@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

We are keen for your feedback! [Please click here for your 1 question survey](#)

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1808218

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : ----</p> <p>Sampler : MLM, SH</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 4</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Dates

Date Samples Received : 18-May-2018 11:55	Issue Date : 22-May-2018
Client Requested Due : 29-May-2018	Scheduled Reporting Date : 29-May-2018
Date : ----	

Delivery Details

Mode of Delivery : Carrier	Security Seal : Intact.
No. of coolers/boxes : 1	Temperature : 3.2°C - Ice present
Receipt Detail : ----	No. of samples received / analysed : 11 / 7

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB111	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB111	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB111	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB111	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB111	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB111	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1808218-001	17-May-2018 00:00	NEL-BH180_0.1m		✓	✓
EM1808218-002	17-May-2018 00:00	NEL-BH180_0.5m	✓		
EM1808218-003	17-May-2018 00:00	NEL-BH180_1.0m		✓	✓
EM1808218-004	17-May-2018 00:00	NEL-BH180_1.5m	✓		
EM1808218-005	17-May-2018 00:00	NEL-BH144_0.1m		✓	✓
EM1808218-006	17-May-2018 00:00	NEL-BH144_0.5m	✓		
EM1808218-007	17-May-2018 00:00	NEL-BH144_1.0m		✓	✓
EM1808218-008	17-May-2018 00:00	NEL-BH144_1.5m	✓		



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1808218-009	17-May-2018 00:00	TB111		✓
EM1808218-010	17-May-2018 00:00	RB111	✓	
EM1808218-011	17-May-2018 00:00	FB111	✓	

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
Client Sample ID(s)							
EA005-P: pH by PC Titrator							
FB111	Clear Plastic Bottle - Natural	----	17-May-2018	18-May-2018	✗	22-May-2018	✗
RB111	Clear Plastic Bottle - Natural	----	17-May-2018	18-May-2018	✗	22-May-2018	✗

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1808218	Page	: 1 of 18
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 18-May-2018
Order number	: ----	Date Analysis Commenced	: 22-May-2018
C-O-C number	: ----	Issue Date	: 28-May-2018
Sampler	: MLM, SH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 11		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1665053)									
EM1808218-001	NEL-BH180_0.1m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	4.4	4.4	0.00	0% - 20%
EM1808228-005	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.9	6.9	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1664667)									
EM1808180-001	Anonymous	EA055: Moisture Content	----	0.1	%	16.1	16.6	3.04	0% - 50%
EM1808218-005	NEL-BH144_0.1m	EA055: Moisture Content	----	0.1	%	24.7	23.9	3.16	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1668324)									
EM1808317-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	22	22	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	11	20	55.8	No Limit
EM1808232-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	51	50	0.00	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	15	53.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	13	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	7	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1668324) - continued									
EM1808232-002	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	22	23	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1668323)									
EM1808317-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1808232-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1673328)									
EM1807877-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808244-022	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1668916)									
EM1807877-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1808252-007	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1665114)									
EM1808218-001	NEL-BH180_0.1m	EK040T: Fluoride	16984-48-8	40	mg/kg	220	210	4.67	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1667798)									
EM1807877-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1808303-007	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1664406)									
EM1808218-001	NEL-BH180_0.1m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1664406)									
EM1808218-001	NEL-BH180_0.1m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1664406)									
EM1808218-001	NEL-BH180_0.1m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1664406) - continued									
EM1808218-001	NEL-BH180_0.1m	EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1667796)									
EM1807877-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1667796)									
EM1807877-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1667796) - continued									
EM1808303-007	Anonymous	EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1667796)									
EM1807877-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1667796) - continued									
EM1808303-007	Anonymous	EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1667796)									
EM1807877-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

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 Work Order : EM1808218
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1667796) - continued									
EM1808303-007	Anonymous	EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1664406)									
EM1808218-001	NEL-BH180_0.1m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1667797)									
EM1807877-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1808303-007	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1664406)									
EM1808218-001	NEL-BH180_0.1m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1667797)									
EM1807877-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1808303-007	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1667603)									
EM1808252-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.56	6.99	6.34	0% - 20%
EM1808270-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.32	7.19	1.79	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1669106)									
EM1808244-042	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1669107)									
EM1808348-001	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.002	78.8	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 1669105)									
EM1808252-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1807868-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1669485)									
EM1808218-010	RB111	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1808379-005	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1663434)									
EM1807877-005	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1808293-002	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1667604)									
EM1808252-004	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1808293-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	6.3	6.2	0.00	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1667517)									
EM1808325-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1667517)									
EM1808325-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1667517)									
EM1808325-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1667517)									
EM1808325-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1667516)									
EM1808149-011	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1808325-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit

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 Work Order : EM1808218
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1667516)									
EM1808149-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1808325-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1667516)									
EM1808149-011	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1808325-001	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1668324)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.6	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	89.8	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	93.1	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	90.8	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	93.8	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	96.3	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.2	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	109	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	92.4	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1668323)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	82.8	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1673328)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	80.2	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1668916)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	91.4	80	110
EK040T: Fluoride Total (QCLot: 1665114)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	90.5	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1667798)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	107	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1664406)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	99.9	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	105	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	103	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	103	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	104	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	102	74	114
EP074H: Naphthalene (QCLot: 1664406)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	89.7	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1664406)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	95.4	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	96.1	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1664406) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	104	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	101	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	94.8	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	94.2	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	94.2	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	94.0	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	105	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	96.3	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	106	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	99.8	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	97.4	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	102	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.0	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	103	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	96.7	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	95.4	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	88.5	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1667796)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	108	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	79.9	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	93.9	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	86.6	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	93.6	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	81.6	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	92.2	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	95.3	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	79.8	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1667796)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	101	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	104	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	88.9	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	81.6	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	94.3	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	100	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	97.8	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	84.8	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	97.6	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	87.3	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1667796)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	97.3	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	104	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	102	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	100	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	106	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	70.8	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	109	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	107	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	106	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	110	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	112	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	104	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	116	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	114	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	117	55	137
EP075I: Organochlorine Pesticides (QCLot: 1667796)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	99.1	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	97.8	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	101	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	99.1	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	103	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	102	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	104	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	105	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	108	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	107	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	106	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	105	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	108	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	97.2	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	113	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	107	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	108	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	111	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	110	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	114	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1664406)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	87.0	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1669106)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.0	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.4	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.8	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	88.2	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	89.8	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.7	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.4	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	91.3	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	92.0	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1669107)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	100	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1669105)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	100	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1669485)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	105	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1663434)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	94.7	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1667604)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	100	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1663608)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	91.1	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1667517)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1667517) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	99.7	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1667517)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	82.0	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	85.2	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	101	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	84.8	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	92.7	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	85.9	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	84.5	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	96.8	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	86.1	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	106	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	89.3	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	95.9	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	117	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	91.3	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1667517)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	97.3	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	103	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	98.9	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	96.8	62	119
EP074G: Trihalomethanes (QCLot: 1667517)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	94.7	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1663609)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	80.0	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	86.4	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	87.8	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	91.9	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	95.0	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	111	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	99.4	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	97.1	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	99.5	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	99.4	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	104	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	106	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	106	56	126



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1663609) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	102	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	102	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	103	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1663612)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	92.9	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	75.6	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	91.0	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	83.2	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	93.6	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	82.4	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	93.5	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	94.3	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	87.9	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1663612)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	36.0	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	80.5	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	63.4	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	77.4	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	93.6	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	118	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	36.7	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	94.8	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	109	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	105	32	135
EP075I: Organochlorine Pesticides (QCLot: 1663612)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	98.8	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	96.9	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	96.2	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	97.8	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	99.3	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	101	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	98.7	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	97.5	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	100	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1663611)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	89.7	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	94.0	60	133



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1673328) - continued							
EM1807877-004	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	58.2	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1668916)							
EM1807877-004	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	93.4	77	113
EK040T: Fluoride Total (QCLot: 1665114)							
EM1808218-003	NEL-BH180_1.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	102	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1667798)							
EM1808218-001	NEL-BH180_0.1m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	116	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1664406)							
EM1808218-003	NEL-BH180_1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	85.0	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	91.6	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1664406)							
EM1808218-003	NEL-BH180_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	82.6	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	79.3	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	91.3	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1667796)							
EM1807877-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	79.4	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	62.4	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	32.6	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1667796)							
EM1807877-004	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	75.5	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	59.1	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1667796)							
EM1807877-004	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	81.4	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	82.1	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1664406)							
EM1808218-003	NEL-BH180_1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	70.5	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1667797)							
EM1808218-003	NEL-BH180_1.0m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	84.9	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	91.4	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	82.1	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1664406)							
EM1808218-003	NEL-BH180_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	67.9	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1667797)							
EM1808218-003	NEL-BH180_1.0m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	84.2	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	87.8	67	121

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 Work Order : EM1808218
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1667797) - continued							
EM1808218-003	NEL-BH180_1.0m	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	79.0	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 1669105)							
EM1807868-003	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	80.3	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1669485)							
EM1808218-011	FB111	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	94.6	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1663434)							
EM1807877-006	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	93.5	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1667604)							
EM1808232-001	Anonymous	EK040P: Fluoride	16984-48-8	250 mg/L	103	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1667517)							
EM1808218-011	FB111	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	73.3	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	69.8	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1667517)							
EM1808218-011	FB111	EP074: Chlorobenzene	108-90-7	20 µg/L	84.0	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1667516)							
EM1808218-011	FB111	EP080: C6 - C9 Fraction	----	280 µg/L	61.0	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1667516)							
EM1808218-011	FB111	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	58.9	44	122
EP080: BTEXN (QCLot: 1667516)							
EM1808218-011	FB111	EP080: Benzene	71-43-2	20 µg/L	73.9	68	130
		EP080: Toluene	108-88-3	20 µg/L	76.8	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1808218	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 18-May-2018
Site	: ----	Issue Date	: 28-May-2018
Sampler	: MLM, SH	No. of samples received	: 11
Order number	:	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RB111, FB111	----	----	----	23-May-2018	17-May-2018	6

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Dissolved Metals by ICP-MS - Suite A	1	16	6.25	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Dissolved Metals by ICP-MS - Suite A	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
NEL-BH180_0.1m,	NEL-BH180_1.0m,	17-May-2018	23-May-2018	24-May-2018	✔	23-May-2018	23-May-2018	✔
NEL-BH144_0.1m,	NEL-BH144_1.0m							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	----	----	----	22-May-2018	31-May-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	23-May-2018	13-Nov-2018	✓	23-May-2018	13-Nov-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	23-May-2018	14-Jun-2018	✓	24-May-2018	14-Jun-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	24-May-2018	14-Jun-2018	✓	24-May-2018	31-May-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	23-May-2018	31-May-2018	✓	24-May-2018	06-Jun-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	22-May-2018	14-Jun-2018	✓	24-May-2018	14-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	23-May-2018	31-May-2018	✓	23-May-2018	02-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	22-May-2018	24-May-2018	✓	23-May-2018	24-May-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	22-May-2018	24-May-2018	✓	23-May-2018	24-May-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	22-May-2018	24-May-2018	✓	23-May-2018	24-May-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation				Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation		Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Halogenated)									
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	23-May-2018	31-May-2018	✓		23-May-2018	02-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)									
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	23-May-2018	31-May-2018	✓		23-May-2018	02-Jul-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons									
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	23-May-2018	31-May-2018	✓		23-May-2018	02-Jul-2018	✓
EP075I: Organochlorine Pesticides									
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	23-May-2018	31-May-2018	✓		23-May-2018	02-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons									
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	22-May-2018	24-May-2018	✓		23-May-2018	24-May-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	23-May-2018	31-May-2018	✓		23-May-2018	02-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	22-May-2018	24-May-2018	✓		23-May-2018	24-May-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH180_0.1m, NEL-BH144_0.1m,	NEL-BH180_1.0m, NEL-BH144_1.0m	17-May-2018	23-May-2018	31-May-2018	✓		23-May-2018	02-Jul-2018	✓

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
RB111,	FB111	17-May-2018	----	----	----	23-May-2018	17-May-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)								
RB111,	FB111	17-May-2018	----	----	----	24-May-2018	13-Nov-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) RB111,	FB111	17-May-2018	----	----	----	28-May-2018	31-May-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB111,	FB111	17-May-2018	----	----	----	23-May-2018	14-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) RB111,	FB111	17-May-2018	----	----	----	22-May-2018	31-May-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB111,	FB111	17-May-2018	----	----	----	23-May-2018	14-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB111,	FB111	17-May-2018	23-May-2018	24-May-2018	✓	23-May-2018	02-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB111,	FB111	17-May-2018	23-May-2018	31-May-2018	✓	23-May-2018	31-May-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB111,	FB111	17-May-2018	23-May-2018	31-May-2018	✓	23-May-2018	31-May-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB111,	FB111	17-May-2018	23-May-2018	31-May-2018	✓	23-May-2018	31-May-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB111,	FB111	17-May-2018	23-May-2018	31-May-2018	✓	23-May-2018	31-May-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB111,	FB111	17-May-2018	23-May-2018	24-May-2018	✓	23-May-2018	02-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB111,	FB111	17-May-2018	23-May-2018	24-May-2018	✓	23-May-2018	02-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB111,	FB111	17-May-2018	23-May-2018	24-May-2018	✓	23-May-2018	02-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB111,	FB111	17-May-2018	23-May-2018	24-May-2018	✓	23-May-2018	02-Jul-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
RB111,	FB111	17-May-2018	23-May-2018	24-May-2018	✓	23-May-2018	02-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
TB111,	RB111,	17-May-2018	23-May-2018	31-May-2018	✓	23-May-2018	31-May-2018	✓
FB111								
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
RB111,	FB111	17-May-2018	23-May-2018	24-May-2018	✓	23-May-2018	02-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
TB111,	RB111,	17-May-2018	23-May-2018	31-May-2018	✓	23-May-2018	31-May-2018	✓
FB111								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
TB111,	RB111,	17-May-2018	23-May-2018	31-May-2018	✓	23-May-2018	31-May-2018	✓
FB111								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	9	22.22	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	0	16	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.

Page : 13 of 13
Work Order : EM1808218
Client : GHD PTY LTD
Project : 31350060910



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1808252**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **SH/MLM**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **7**
No. of samples analysed : **6**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 14-May-2018 16:30
Date Analysis Commenced : 21-May-2018
Issue Date : 28-May-2018 17:42



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH191_0.5m	NEL-BH191_1.0m	QC1003	----	----
Client sampling date / time					12-May-2018 00:00	12-May-2018 00:00	12-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808252-001	EM1808252-002	EM1808252-007	-----	-----
				Result	Result	Result	Result	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.8	6.3	6.1	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		9.8	29.6	27.9	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	5	7	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Copper	7440-50-8	5	mg/kg		18	24	22	----	----
Lead	7439-92-1	5	mg/kg		8	17	16	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg		40	61	54	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	----	----
Zinc	7440-66-6	5	mg/kg		30	56	46	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		260	460	420	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH191_0.5m	NEL-BH191_1.0m	QC1003	----	----
Client sampling date / time					12-May-2018 00:00	12-May-2018 00:00	12-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808252-001	EM1808252-002	EM1808252-007	-----	-----
					Result	Result	Result	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH191_0.5m	NEL-BH191_1.0m	QC1003	----	----
Client sampling date / time				12-May-2018 00:00	12-May-2018 00:00	12-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808252-001	EM1808252-002	EM1808252-007	-----	-----
				Result	Result	Result	----	----

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	----	----

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH191_0.5m	NEL-BH191_1.0m	QC1003	----	----
Client sampling date / time				12-May-2018 00:00	12-May-2018 00:00	12-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808252-001	EM1808252-002	EM1808252-007	-----	-----
				Result	Result	Result	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH191_0.5m	NEL-BH191_1.0m	QC1003	----	----
Client sampling date / time					12-May-2018 00:00	12-May-2018 00:00	12-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808252-001	EM1808252-002	EM1808252-007	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		91.5	108	107	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		90.5	81.7	85.7	----	----
Toluene-D8	2037-26-5	0.1	%		82.0	75.8	78.9	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		83.8	77.2	80.5	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		73.0	94.5	94.7	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		58.6	74.9	75.6	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		49.6	62.3	60.7	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		62.6	79.1	79.1	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		62.7	74.5	75.1	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		66.1	85.4	84.2	----	----
Anthracene-d10	1719-06-8	0.025	%		76.0	95.3	94.6	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		85.8	107	106	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB109	FB109	TB109	----	----
Client sampling date / time				12-May-2018 00:00	12-May-2018 00:00	12-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808252-004	EM1808252-005	EM1808252-006	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.56	5.97	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB109	FB109	TB109	----	----
Client sampling date / time				12-May-2018 00:00	12-May-2018 00:00	12-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808252-004	EM1808252-005	EM1808252-006	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB109	FB109	TB109	----	----
Client sampling date / time				12-May-2018 00:00	12-May-2018 00:00	12-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808252-004	EM1808252-005	EM1808252-006	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB109	FB109	TB109	----	----
Client sampling date / time					12-May-2018 00:00	12-May-2018 00:00	12-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808252-004	EM1808252-005	EM1808252-006	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		85.4	80.0	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		103	101	----	----	----
Toluene-D8	2037-26-5	5	%		106	101	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		102	98.1	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		31.2	30.8	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		82.0	81.8	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		72.5	65.8	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		96.3	94.9	----	----	----
Anthracene-d10	1719-06-8	1.0	%		96.9	93.2	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		109	102	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB109	FB109	TB109	----	----
Client sampling date / time					12-May-2018 00:00	12-May-2018 00:00	12-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808252-004	EM1808252-005	EM1808252-006	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		29.3	30.1	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		67.0	76.7	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		52.3	64.4	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		69.8	74.2	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		74.1	81.8	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		102	113	----	----	----
Anthracene-d10	1719-06-8	0.25	%		73.4	90.4	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		83.6	104	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		101	99.7	86.0	----	----
Toluene-D8	2037-26-5	2	%		98.6	94.1	77.9	----	----
4-Bromofluorobenzene	460-00-4	2	%		99.7	93.1	82.4	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

SCANNED

Page 1 of 1

[illegible]

Sampled by:	SH / MLM (GHD)	Date/Time:	12/05/18 AM	Relinquished by:	SH (GHD)	Date/Time:	12/05/18 PM
Received by:	Core shed fridge	Date/Time:	12/05/18 PM	Relinquished by:	Core shed fridge	Date/Time:	14/05/18 PM
Received by Courier:	Ru (AM)	Date/Time:	14/05/18 4:30p	Relinquished by:		Date/Time:	
Received by Lab:		Date/Time:					
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

207 21/5/18

From: Graeme Jablonskas
Sent: Monday, 21 May 2018 8:20 AM
To: COC Melbourne
Subject: FW: ON HOLD-EM1807877 AND EM1807878-GHD-NORTH EAST LINK CONTAMINATION

See below

Kind Regards

Graeme Jablonskas
Senior Project Manager – Springvale
Environmental



T +61 3 8549 9600 **D** +61 3 8549 9609
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From: Rosli, Nazuha [mailto:nazuha.rosli@aecom.com]
Sent: Monday, 21 May 2018 8:06 AM
To: Melbourne Enviro Services <MelbourneEnviroSer@alsglobal.com>
Cc: Menon, Venesa <venesa.menon@aecom.com>; Shirley LeCornu <shirley.lecornu@alsglobal.com>
Subject: RE: ON HOLD-EM1807877 AND EM1807878-GHD-NORTH EAST LINK CONTAMINATION

Hi Shirley,

Please analyse:

1. NEL-BH191_0.5m = IWRG621
2. NEL-BH191_1.0m = IWRG621
3. NEL-BH159_0.2m = IWRG621
4. NEL-BH159_1.5m = IWRG621
5. QC1003 = IWRG621
6. QC2003 = IWRG621 (triplicate - forward to Eurofins)
7. RB109 = IWRG621 water equivalent
8. RB110 = IWRG621 water equivalent
9. TB109 = Volatile TPH/BTEX
10. TB110 = Volatile TPH/BTEX
11. FB109 = IWRG621 water equivalent
12. FB110 = IWRG621 water equivalent
13. FB110 = IWRG621 water equivalent

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1808252

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number :</p> <p>C-O-C number : ----</p> <p>Site : North East Link - Contamination</p> <p>Sampler : SH/MLM</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 4</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

<p>Date Samples Received : 14-May-2018 16:30</p> <p>Client Requested Due : 28-May-2018</p> <p>Date :</p>	<p>Issue Date : 21-May-2018</p> <p>Scheduled Reporting Date : 28-May-2018</p>
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Delivery Details

<p>Mode of Delivery : Carrier</p> <p>No. of coolers/boxes : 1</p> <p>Receipt Detail :</p>	<p>Security Seal : Intact.</p> <p>Temperature : 2.8°C - Ice present</p> <p>No. of samples received / analysed : 7 / 6</p>
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General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB109	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB109	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB109	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB109	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB109	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB109	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1808252-001	12-May-2018 00:00	NEL-BH191_0.5m		✓	✓
EM1808252-002	12-May-2018 00:00	NEL-BH191_1.0m		✓	✓
EM1808252-003	12-May-2018 00:00	NEL-BH191_1.5m	✓		
EM1808252-007	12-May-2018 00:00	QC1003		✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1808252-004	12-May-2018 00:00	RB109	✓	
EM1808252-005	12-May-2018 00:00	FB109	✓	
EM1808252-006	12-May-2018 00:00	TB109		✓

Proactive Holding Time Report



The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Due for extraction	Due for analysis	Samples Received		Instructions Received	
Client Sample ID(s)	Container			Date	Evaluation	Date	Evaluation
EA001: pH in soil using a 0.01M CaCl₂ extract							
NEL-BH191_0.5m	Soil Glass Jar - Unpreserved	19-May-2018	19-May-2018	14-May-2018	✔	21-May-2018	✖
NEL-BH191_1.0m	Soil Glass Jar - Unpreserved	19-May-2018	19-May-2018	14-May-2018	✔	21-May-2018	✖
QC1003	Soil Glass Jar - Unpreserved	19-May-2018	19-May-2018	14-May-2018	✔	21-May-2018	✖
EP074-UT: Volatile Organic Compounds - Ultra-trace							
NEL-BH191_0.5m	Soil Glass Jar - Unpreserved	19-May-2018	19-May-2018	14-May-2018	✔	21-May-2018	✖
NEL-BH191_1.0m	Soil Glass Jar - Unpreserved	19-May-2018	19-May-2018	14-May-2018	✔	21-May-2018	✖
QC1003	Soil Glass Jar - Unpreserved	19-May-2018	19-May-2018	14-May-2018	✔	21-May-2018	✖

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Due for extraction	Due for analysis	Samples Received		Instructions Received	
Client Sample ID(s)	Container			Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator							
FB109	Clear Plastic Bottle - Natural	----	12-May-2018	14-May-2018	✖	21-May-2018	✖
RB109	Clear Plastic Bottle - Natural	----	12-May-2018	14-May-2018	✖	21-May-2018	✖
EP066: Polychlorinated Biphenyls (PCB)							
FB109	Amber Glass Bottle - Unpreserved	19-May-2018	28-Jun-2018	14-May-2018	✔	21-May-2018	✖
RB109	Amber Glass Bottle - Unpreserved	19-May-2018	28-Jun-2018	14-May-2018	✔	21-May-2018	✖
EP071: TRH - Semivolatile Fraction							
FB109	Amber Glass Bottle - Unpreserved	19-May-2018	28-Jun-2018	14-May-2018	✔	21-May-2018	✖
RB109	Amber Glass Bottle - Unpreserved	19-May-2018	28-Jun-2018	14-May-2018	✔	21-May-2018	✖
EP075(SIM): PAH/Phenols (GC/MS - SIM)							
FB109	Amber Glass Bottle - Unpreserved	19-May-2018	28-Jun-2018	14-May-2018	✔	21-May-2018	✖
RB109	Amber Glass Bottle - Unpreserved	19-May-2018	28-Jun-2018	14-May-2018	✔	21-May-2018	✖
EP075-EM: Semivolatile Organic Compounds - Waste Classification							
FB109	Amber Glass Bottle - Unpreserved	19-May-2018	28-Jun-2018	14-May-2018	✔	21-May-2018	✖
RB109	Amber Glass Bottle - Unpreserved	19-May-2018	28-Jun-2018	14-May-2018	✔	21-May-2018	✖

ALL ACCOUNTS

Email ap-fss@ghd.com

- *AU Certificate of Analysis - NATA (COA)

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QUALITY CONTROL REPORT

Work Order	: EM1808252	Page	: 1 of 20
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 14-May-2018
Order number	:	Date Analysis Commenced	: 21-May-2018
C-O-C number	: ----	Issue Date	: 28-May-2018
Sampler	: SH/MLM		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 7		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1658971)									
EM1807877-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.5	6.5	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1663124)									
EM1808244-032	Anonymous	EA055: Moisture Content	----	0.1	%	9.5	12.1	24.3	0% - 50%
EM1808252-007	QC1003	EA055: Moisture Content	----	0.1	%	27.9	29.6	6.14	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1663433)									
EM1808244-037	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	9	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	15	10	37.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	8	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	19	20.8	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	27	25	6.55	No Limit
EM1808257-108	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	27	27	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	10	46.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	22	23	5.64	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	7	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit

Page : 3 of 20
 Work Order : EM1808252
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1663433) - continued									
EM1808257-108	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	12	10	18.4	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1663431)									
EM1808244-037	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1808257-108	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1673328)									
EM1807877-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808244-022	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1668916)									
EM1807877-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1808252-007	QC1003	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1662956)									
EM1807877-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	430	390	9.71	0% - 50%
EM1808302-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	150	140	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1667798)									
EM1807877-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1808303-007	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1658962)									
EM1807877-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1658962)									
EM1807877-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1658962)									
EM1807877-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1658962) - continued									
EM1807877-001	Anonymous	EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1667796)									
EM1807877-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1667796)									
EM1807877-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1667796) - continued									
EM1808303-007	Anonymous	EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1667796)									
EM1807877-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1667796) - continued									
EM1808303-007	Anonymous	EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1667796)									
EM1807877-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1808303-007	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1667796) - continued									
EM1808303-007	Anonymous	EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1658962)									
EM1807877-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1667797)									
EM1807877-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1808303-007	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1658962)									
EM1807877-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1667797)									
EM1807877-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1808303-007	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1667603)									
EM1808252-004	RB109	EA005-P: pH Value	----	0.01	pH Unit	6.56	6.99	6.34	0% - 20%
EM1808270-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.32	7.19	1.79	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1669106)									
EM1808244-042	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1669107)									
EM1808348-001	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.002	78.8	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 1669105)									
EM1808252-005	FB109	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1807868-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1660419)									
EM1807877-005	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1663434)									
EM1807877-005	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1808293-002	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1667604)									
EM1808252-004	RB109	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1808293-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	6.3	6.2	0.00	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1662600)									
EM1808278-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1808288-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1662600)									
EM1808278-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1808288-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1662600) - continued									
EM1808288-001	Anonymous	EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1662600)									
EM1808278-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1808288-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1662600)									
EM1808278-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1808288-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1662595)									
EM1808273-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	90	60	37.0	No Limit
EM1808273-010	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1662601)									
EM1808278-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	20000	20600	2.84	0% - 50%
EM1808288-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1662595)									
EM1808273-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	100	70	27.7	No Limit
EM1808273-010	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1662601)									
EM1808278-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	19400	19900	2.48	No Limit
EM1808288-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1662595)									
EM1808273-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	28	25	12.2	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1808273-010	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit

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 Work Order : EM1808252
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1662595) - continued									
EM1808273-010	Anonymous	EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080: BTEXN (QC Lot: 1662601)									
EM1808278-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	15500	15800	2.27	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	15	17	13.3	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	1230	1280	4.72	0% - 50%
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	26	28	10.7	0% - 50%
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	6	7	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	379	388	2.20	No Limit
EM1808288-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1663433)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	97.7	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	93.5	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	100	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	88.3	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	93.8	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	103	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.8	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	94.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	97.3	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	95.7	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1663431)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.6	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1673328)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	80.2	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1668916)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	91.4	80	110
EK040T: Fluoride Total (QCLot: 1662956)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	89.5	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1667798)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	107	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1658962)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	88.7	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	89.2	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	89.0	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	88.9	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	91.1	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	90.2	74	114
EP074H: Naphthalene (QCLot: 1658962)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	87.3	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1658962)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	74.6	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	80.7	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1658962) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	87.8	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.8	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	87.3	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.2	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	85.2	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	90.9	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	86.9	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	87.8	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	97.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	85.4	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	91.7	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	98.3	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	77.2	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	91.3	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.2	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	90.5	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	84.3	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1667796)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	108	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	79.9	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	93.9	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	86.6	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	93.6	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	81.6	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	92.2	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	95.3	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	79.8	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1667796)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	101	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	104	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	88.9	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	81.6	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	94.3	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	100	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	97.8	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	84.8	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	97.6	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	87.3	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1667796)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	97.3	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	104	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	102	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	100	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	106	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	70.8	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	109	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	107	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	106	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	110	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	112	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	104	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	116	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	114	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	117	55	137
EP075I: Organochlorine Pesticides (QCLot: 1667796)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	99.1	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	97.8	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	101	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	99.1	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	103	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	102	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	104	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	105	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	108	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	107	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	106	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	105	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	108	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	97.2	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	113	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	107	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	108	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	111	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	110	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	114	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1658962)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	85.3	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1669106)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.0	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.4	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.8	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	88.2	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	89.8	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.7	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.4	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	91.3	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	92.0	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1669107)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	100	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1669105)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	100	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1660419)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	102	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1663434)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	94.7	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1667604)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	100	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1659014)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	75.9	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1662600)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1662600) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	98.7	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1662600)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	94.2	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	96.3	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	102	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	97.1	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	98.8	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	95.8	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	92.6	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	102	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	98.2	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	104	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	99.3	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	99.3	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	104	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	100	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1662600)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	100.0	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	93.9	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	95.3	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	98.8	62	119
EP074G: Trihalomethanes (QCLot: 1662600)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	99.2	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1659015)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	81.6	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	80.3	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	82.4	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	83.2	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	82.5	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	95.2	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	84.2	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	81.8	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	81.6	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	81.7	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	83.2	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	86.9	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	84.6	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit	Result					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1659015) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	80.7	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	81.0	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	83.1	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1659007)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	100	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	88.4	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	106	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	107	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	116	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	115	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	114	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	113	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	109	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1659007)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	40.6	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	95.1	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	83.9	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	89.1	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	106	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	113	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	58.1	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	95.3	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	102	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	134	32	135
EP075I: Organochlorine Pesticides (QCLot: 1659007)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	112	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	112	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	110	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	113	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	114	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	115	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	112	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	108	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	114	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1659016)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	91.3	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	90.2	60	133



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1659016) - continued								
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	88.9	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1662595)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	92.1	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1662601)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	96.2	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1659016)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	90.1	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	89.1	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	92.5	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1662595)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	91.7	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1662601)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	95.3	66	123
EP080: BTEXN (QCLot: 1662595)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	95.8	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	99.2	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	92.3	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	96.7	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	101	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	97.7	74	124
EP080: BTEXN (QCLot: 1662601)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	96.1	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.7	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	96.8	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	98.4	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	99.1	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	102	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID Client sample ID Method: Compound CAS Number				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
					MS	Low	High



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1663433)							
EM1808244-038	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	100.0	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	100	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	102	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	96.3	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	96.2	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	102	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	85.8	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	94.2	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1663431)							
EM1808244-038	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	94.5	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1673328)							
EM1807877-004	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	58.2	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1668916)							
EM1807877-004	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	93.4	77	113
EK040T: Fluoride Total (QCLot: 1662956)							
EM1807877-004	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	94.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1667798)							
EM1808218-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	116	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1658962)							
EM1807877-004	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	89.0	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	88.2	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1658962)							
EM1807877-004	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	87.3	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	83.7	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	89.6	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1667796)							
EM1807877-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	79.4	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	62.4	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	32.6	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1667796)							
EM1807877-004	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	75.5	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	59.1	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1667796)							
EM1807877-004	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	81.4	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	82.1	27	169

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1658962)							
EM1807877-004	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	75.7	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1667797)							
EM1808218-003	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	84.9	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	91.4	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	82.1	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1658962)							
EM1807877-004	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	74.5	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1667797)							
EM1808218-003	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	84.2	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	87.8	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	79.0	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 1669105)							
EM1807868-003	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	80.3	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1660419)							
EM1807877-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	101	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1663434)							
EM1807877-006	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	93.5	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1667604)							
EM1808232-001	Anonymous	EK040P: Fluoride	16984-48-8	250 mg/L	103	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1662600)							
EM1808249-009	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	83.2	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	87.3	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1662600)							
EM1808249-009	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	99.2	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1662595)							
EM1808273-001	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	95.3	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1662601)							
EM1808249-009	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	75.0	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1662595)							
EM1808273-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	83.4	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1662601)							

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Work Order : EM1808252
Client : GHD PTY LTD
Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1662601) - continued							
EM1808249-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	74.0	44	122
EP080: BTEXN (QCLot: 1662595)							
EM1808273-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	92.5	68	130
		EP080: Toluene	108-88-3	20 µg/L	100	72	132
EP080: BTEXN (QCLot: 1662601)							
EM1808249-009	Anonymous	EP080: Benzene	71-43-2	20 µg/L	98.9	68	130
		EP080: Toluene	108-88-3	20 µg/L	92.7	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1808252	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 14-May-2018
Site	: North East Link - Contamination	Issue Date	: 28-May-2018
Sampler	: SH/MLM	No. of samples received	: 7
Order number	:	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

Matrix: SOIL

Matrix: WATER

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural	FB109	----	----	----	23-May-2018	12-May-2018	11
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved	FB109	22-May-2018	19-May-2018	3	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved	FB109	22-May-2018	19-May-2018	3	----	----	----
EP075A: Phenolic Compounds (Halogenated)							



Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP075A: Phenolic Compounds (Halogenated) - Analysis Holding Time Compliance						
Amber Glass Bottle - Unpreserved RB109, FB109	22-May-2018	19-May-2018	3	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)						
Amber Glass Bottle - Unpreserved RB109, FB109	22-May-2018	19-May-2018	3	----	----	----
EP075I: Organochlorine Pesticides						
Amber Glass Bottle - Unpreserved RB109, FB109	22-May-2018	19-May-2018	3	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Amber Glass Bottle - Unpreserved RB109, FB109	22-May-2018	19-May-2018	3	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Amber Glass Bottle - Unpreserved RB109, FB109	22-May-2018	19-May-2018	3	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Dissolved Metals by ICP-MS - Suite A	1	16	6.25	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Dissolved Metals by ICP-MS - Suite A	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	21-May-2018	19-May-2018	✖	21-May-2018	21-May-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	----	----	----	22-May-2018	26-May-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	23-May-2018	08-Nov-2018	✓	23-May-2018	08-Nov-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	23-May-2018	09-Jun-2018	✓	24-May-2018	09-Jun-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	24-May-2018	09-Jun-2018	✓	24-May-2018	31-May-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	23-May-2018	26-May-2018	✓	24-May-2018	06-Jun-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	22-May-2018	09-Jun-2018	✓	23-May-2018	09-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	23-May-2018	26-May-2018	✓	23-May-2018	02-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	21-May-2018	19-May-2018	✖	22-May-2018	19-May-2018	✖
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	21-May-2018	19-May-2018	✖	22-May-2018	19-May-2018	✖



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	21-May-2018	19-May-2018	✖	22-May-2018	19-May-2018	✖
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	23-May-2018	26-May-2018	✔	23-May-2018	02-Jul-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	23-May-2018	26-May-2018	✔	23-May-2018	02-Jul-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	23-May-2018	26-May-2018	✔	23-May-2018	02-Jul-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	23-May-2018	26-May-2018	✔	23-May-2018	02-Jul-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	21-May-2018	19-May-2018	✖	22-May-2018	19-May-2018	✖
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	23-May-2018	26-May-2018	✔	23-May-2018	02-Jul-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	21-May-2018	19-May-2018	✖	22-May-2018	19-May-2018	✖
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH191_0.5m, QC1003	NEL-BH191_1.0m,	12-May-2018	23-May-2018	26-May-2018	✔	23-May-2018	02-Jul-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
RB109,	FB109	12-May-2018	----	----	----	23-May-2018	12-May-2018	✖



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)	FB109	12-May-2018	----	----	----	24-May-2018	08-Nov-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)	FB109	12-May-2018	----	----	----	25-May-2018	26-May-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	FB109	12-May-2018	----	----	----	21-May-2018	09-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)	FB109	12-May-2018	----	----	----	22-May-2018	26-May-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	FB109	12-May-2018	----	----	----	23-May-2018	09-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)	FB109	12-May-2018	22-May-2018	19-May-2018	✗	23-May-2018	01-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)	FB109	12-May-2018	22-May-2018	26-May-2018	✓	22-May-2018	26-May-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB109	12-May-2018	22-May-2018	26-May-2018	✓	22-May-2018	26-May-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB109	12-May-2018	22-May-2018	26-May-2018	✓	22-May-2018	26-May-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)	FB109	12-May-2018	22-May-2018	26-May-2018	✓	22-May-2018	26-May-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))	FB109	12-May-2018	22-May-2018	19-May-2018	✗	23-May-2018	01-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)	FB109	12-May-2018	22-May-2018	19-May-2018	✗	23-May-2018	01-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)	FB109	12-May-2018	22-May-2018	19-May-2018	✗	23-May-2018	01-Jul-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB109,	FB109	12-May-2018	22-May-2018	19-May-2018	✖	23-May-2018	01-Jul-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB109,	FB109	12-May-2018	22-May-2018	19-May-2018	✖	23-May-2018	01-Jul-2018	✔
Amber VOC Vial - Sulfuric Acid (EP080) RB109, TB109	FB109,	12-May-2018	22-May-2018	26-May-2018	✔	22-May-2018	26-May-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB109,	FB109	12-May-2018	22-May-2018	19-May-2018	✖	23-May-2018	01-Jul-2018	✔
Amber VOC Vial - Sulfuric Acid (EP080) RB109, TB109	FB109,	12-May-2018	22-May-2018	26-May-2018	✔	22-May-2018	26-May-2018	✔
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RB109, TB109	FB109,	12-May-2018	22-May-2018	26-May-2018	✔	22-May-2018	26-May-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	0	16	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Certificate of Analysis

GHD Melbourne
Level 8, 180 Lonsdale St
Melbourne
VIC 3000



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: David Quinn

Report 599515-S
Project name NORTH EAST LINK - CONTAMINATION
Project ID 31/35006/0910
Received Date May 21, 2018

Client Sample ID			QC2003
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-My28248
Date Sampled			May 12, 2018
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
Volatile Organics			
1.1-Dichloroethane	0.5	mg/kg	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5
Allyl chloride	0.5	mg/kg	< 0.5
Benzene	0.1	mg/kg	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5
Bromochloromethane	0.5	mg/kg	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5
Bromoform	0.5	mg/kg	< 0.5
Bromomethane	0.5	mg/kg	< 0.5

Client Sample ID			QC2003
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-My28248
Date Sampled			May 12, 2018
Test/Reference	LOR	Unit	
Volatile Organics			
Carbon disulfide	0.5	mg/kg	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5
Chloroethane	0.5	mg/kg	< 0.5
Chloroform	0.5	mg/kg	< 0.5
Chloromethane	0.5	mg/kg	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1
Iodomethane	0.5	mg/kg	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5
o-Xylene	0.1	mg/kg	< 0.1
Styrene	0.5	mg/kg	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5
Toluene	0.1	mg/kg	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5
Xylenes - Total	0.3	mg/kg	< 0.3
Total MAH*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5
4-Bromofluorobenzene (surr.)	1	%	74
Toluene-d8 (surr.)	1	%	81
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5

Client Sample ID			QC2003
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-My28248
Date Sampled			May 12, 2018
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	65
p-Terphenyl-d14 (surr.)	1	%	67
Organochlorine Pesticides			
Chlordanes - Total	0.1	mg/kg	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05
a-BHC	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-BHC	0.05	mg/kg	< 0.05
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05
Toxaphene	1	mg/kg	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	72
Tetrachloro-m-xylene (surr.)	1	%	81
Polychlorinated Biphenyls			
Aroclor-1016	0.1	mg/kg	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1

Client Sample ID			QC2003
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-My28248
Date Sampled			May 12, 2018
Test/Reference	LOR	Unit	
Polychlorinated Biphenyls			
Total PCB*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	72
Tetrachloro-m-xylene (surr.)	1	%	81
Phenols (Halogenated)			
2-Chlorophenol	0.5	mg/kg	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	< 1
2,4,6-Trichlorophenol	1.0	mg/kg	< 1
2,6-Dichlorophenol	0.5	mg/kg	< 0.5
4-Chloro-3-methylphenol	1.0	mg/kg	< 1
Pentachlorophenol	1.0	mg/kg	< 1
Tetrachlorophenols - Total	1.0	mg/kg	< 1
Total Halogenated Phenol*	1	mg/kg	< 1
Phenols (non-Halogenated)			
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	< 20
2-Methyl-4,6-dinitrophenol	5	mg/kg	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2
2-Nitrophenol	1.0	mg/kg	< 1
2,4-Dimethylphenol	0.5	mg/kg	< 0.5
2,4-Dinitrophenol	5	mg/kg	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4
4-Nitrophenol	5	mg/kg	< 5
Dinoseb	20	mg/kg	< 20
Phenol	0.5	mg/kg	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20
Phenol-d6 (surr.)	1	%	58
Chromium (hexavalent)	1	mg/kg	< 1
Cyanide (total)	5	mg/kg	< 5
Fluoride	100	mg/kg	610
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	8.2
% Moisture	1	%	27
Heavy Metals			
Arsenic	2	mg/kg	5.5
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	54
Copper	5	mg/kg	22
Lead	5	mg/kg	14
Mercury	0.1	mg/kg	< 0.1
Molybdenum	5	mg/kg	< 5
Nickel	5	mg/kg	52
Selenium	2	mg/kg	< 2
Silver	0.2	mg/kg	< 0.2
Tin	10	mg/kg	< 10
Zinc	5	mg/kg	46

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Vic EPA IWRG 621 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	May 24, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
Volatile Organics	Melbourne	May 24, 2018	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 24, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 24, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	May 24, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	May 24, 2018	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Melbourne	May 24, 2018	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Phenols (Halogenated)	Melbourne	May 24, 2018	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	May 24, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Chromium (hexavalent)	Melbourne	May 24, 2018	28 Day
- Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)			
Cyanide (total)	Melbourne	May 24, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride	Melbourne	May 25, 2018	28 Day
- Method: LTM-INO-4150 Determination of Total Fluoride PART A – CIC			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	May 24, 2018	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Metals IWRG 621 : Metals M12	Melbourne	May 24, 2018	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	May 23, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name: GHD Pty Ltd VIC
Address: Level 8, 180 Lonsdale St
Melbourne
VIC 3000

Project Name: NORTH EAST LINK - CONTAMINATION
Project ID: 31/35006/0910

Order No.:
Report #: 599515
Phone: 8687 8000
Fax: 8687 8111

Received: May 21, 2018 3:00 PM
Due: May 28, 2018
Priority: 5 Day
Contact Name: David Quinn

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
1	QC2003	May 12, 2018		Soil	M18-My28248	X
Test Counts						1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank										
Heavy Metals										
Arsenic				mg/kg	< 2			2	Pass	
Cadmium				mg/kg	< 0.4			0.4	Pass	
Chromium				mg/kg	< 5			5	Pass	
Copper				mg/kg	< 5			5	Pass	
Lead				mg/kg	< 5			5	Pass	
Mercury				mg/kg	< 0.1			0.1	Pass	
Molybdenum				mg/kg	< 5			5	Pass	
Nickel				mg/kg	< 5			5	Pass	
Selenium				mg/kg	< 2			2	Pass	
Silver				mg/kg	< 0.2			0.2	Pass	
Tin				mg/kg	< 10			10	Pass	
Zinc				mg/kg	< 5			5	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic				%	108			80-120	Pass	
Cadmium				%	104			80-120	Pass	
Chromium				%	108			80-120	Pass	
Copper				%	105			80-120	Pass	
Lead				%	109			80-120	Pass	
Mercury				%	81			75-125	Pass	
Molybdenum				%	108			80-120	Pass	
Nickel				%	106			80-120	Pass	
Selenium				%	105			80-120	Pass	
Silver				%	105			80-120	Pass	
Tin				%	110			80-120	Pass	
Zinc				%	108			80-120	Pass	
Test	Lab Sample ID	QA Source		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate										
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					Result 1	Result 2	RPD			
TRH C6-C9	S18-My27844	NCP		mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate										
Volatile Organics					Result 1	Result 2	RPD			
1.1-Dichloroethane	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trichlorobenzene	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobutadiene	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Butanone (MEK)	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Propanone (Acetone)	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Allyl chloride	S18-My27844	NCP		mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
Benzene	S18-My27844	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Bromochloromethane	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromodichloromethane	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromoform	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromomethane	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon disulfide	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon Tetrachloride	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chlorobenzene	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroethane	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroform	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloromethane	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.2-Dichloroethene	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.3-Dichloropropene	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromochloromethane	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromomethane	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dichlorodifluoromethane	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Ethylbenzene	S18-My27844	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Iodomethane	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Isopropyl benzene (Cumene)	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Methylene Chloride	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Styrene	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Tetrachloroethene	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Toluene	S18-My27844	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
trans-1.2-Dichloroethene	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
trans-1.3-Dichloropropene	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichloroethene	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichlorofluoromethane	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Vinyl chloride	S18-My27844	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Xylenes - Total	S18-My27844	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1.2.3-cd)pyrene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	B18-My34138	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4.4'-DDD	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4.4'-DDE	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4.4'-DDT	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass

Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Aldrin	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	B18-My34138	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Toxaphene	B18-My34138	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	B18-My34138	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1221	B18-My34138	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	B18-My34138	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1242	B18-My34138	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1248	B18-My34138	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1254	B18-My34138	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1260	B18-My34138	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Total PCB*	B18-My34138	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	M18-My28577	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	M18-My28577	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	M18-My28577	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	M18-My28577	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	M18-My28577	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	M18-My28577	NCP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	M18-My28577	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	M18-My28577	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
2-Nitrophenol	M18-My28577	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dinitrophenol	M18-My28577	NCP	mg/kg	< 5	< 5	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M18-My28577	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	M18-My28577	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	M18-My28577	NCP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	M18-My28577	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M18-My28579	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Cyanide (total)	M18-My28477	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Fluoride	M18-My28773	NCP	mg/kg	1300	1800	38	30%	Fail
pH (1:5 Aqueous extract at 25°C as rec.)	M18-My30460	NCP	pH Units	4.5	4.5	pass	30%	Pass
% Moisture	S18-My28268	NCP	%	13	11	22	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M18-My28007	NCP	mg/kg	16	18	11	30%	Pass
Cadmium	M18-My28007	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M18-My28007	NCP	mg/kg	47	47	<1	30%	Pass
Copper	M18-My28007	NCP	mg/kg	6.7	6.9	4.0	30%	Pass
Lead	M18-My28007	NCP	mg/kg	13	13	4.0	30%	Pass
Mercury	M18-My28007	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Molybdenum	M18-My28007	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Nickel	M18-My28007	NCP	mg/kg	15	15	3.0	30%	Pass
Selenium	M18-My28007	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M18-My28007	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tin	M18-My28007	NCP	mg/kg	< 10	< 10	<1	30%	Pass
Zinc	M18-My28007	NCP	mg/kg	18	18	3.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Mary Makarios	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Michael Brancati	Senior Analyst-Inorganic (VIC)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EM1808553**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **SH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **9**
No. of samples analysed : **7**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 25-May-2018 10:45
Date Analysis Commenced : 30-May-2018
Issue Date : 04-Jun-2018 15:06



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH156_0.1m	NEL-BH156_0.5m	NEL-BH194_0.2m	NEL-BH194_1.0m	----
Client sampling date / time					24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1808553-001	EM1808553-002	EM1808553-004	EM1808553-006	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.9	6.5	5.8	6.9	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		15.8	18.4	10.9	14.9	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		16	20	13	25	----
Lead	7439-92-1	5	mg/kg		28	15	29	12	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		32	50	25	58	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		80	51	42	113	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		350	400	300	460	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH156_0.1m	NEL-BH156_0.5m	NEL-BH194_0.2m	NEL-BH194_1.0m	----
Client sampling date / time					24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1808553-001	EM1808553-002	EM1808553-004	EM1808553-006	-----
					Result	Result	Result	Result	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH156_0.1m	NEL-BH156_0.5m	NEL-BH194_0.2m	NEL-BH194_1.0m	----
Client sampling date / time				24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	----	
Compound	CAS Number	LOR	Unit	EM1808553-001	EM1808553-002	EM1808553-004	EM1808553-006	-----	
				Result	Result	Result	Result	----	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	----	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	----	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	----	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	----	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	----	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	----	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	----	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH156_0.1m	NEL-BH156_0.5m	NEL-BH194_0.2m	NEL-BH194_1.0m	----
Client sampling date / time					24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1808553-001	EM1808553-002	EM1808553-004	EM1808553-006	-----
				Result	Result	Result	Result	Result	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH156_0.1m	NEL-BH156_0.5m	NEL-BH194_0.2m	NEL-BH194_1.0m	----
Client sampling date / time					24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1808553-001	EM1808553-002	EM1808553-004	EM1808553-006	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		86.2	85.4	90.8	89.4	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		66.3	86.6	84.0	72.8	----
Toluene-D8	2037-26-5	0.1	%		92.5	105	90.2	102	----
4-Bromofluorobenzene	460-00-4	0.1	%		65.8	79.0	87.0	76.4	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		91.7	94.9	91.4	97.3	----
2-Chlorophenol-D4	93951-73-6	0.025	%		70.1	73.8	70.5	74.5	----
2,4,6-Tribromophenol	118-79-6	0.025	%		76.3	81.8	88.9	76.7	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		83.7	89.5	82.5	87.2	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		78.8	84.0	77.2	82.3	----
2-Fluorobiphenyl	321-60-8	0.025	%		85.6	89.2	89.0	81.9	----
Anthracene-d10	1719-06-8	0.025	%		96.2	101	102	102	----
4-Terphenyl-d14	1718-51-0	0.025	%		114	117	119	119	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB112	RB112	TB112	----	----
Client sampling date / time				24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808553-007	EM1808553-008	EM1808553-009	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.71	5.63	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB112	RB112	TB112	----	----
Client sampling date / time					24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808553-007	EM1808553-008	EM1808553-009	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB112	RB112	TB112	----	----
Client sampling date / time				24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808553-007	EM1808553-008	EM1808553-009	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB112	RB112	TB112	----	----
Client sampling date / time					24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808553-007	EM1808553-008	EM1808553-009	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		83.3	65.0	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		103	99.9	----	----	----
Toluene-D8	2037-26-5	5	%		108	102	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		109	105	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		22.7	22.6	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		58.5	58.4	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		56.8	44.4	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		67.2	62.9	----	----	----
Anthracene-d10	1719-06-8	1.0	%		85.5	68.6	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		97.4	75.6	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB112	RB112	TB112	----	----
Client sampling date / time				24-May-2018 00:00	24-May-2018 00:00	24-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808553-007	EM1808553-008	EM1808553-009	-----	-----
				Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.25	%	24.6	25.6	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%	69.4	71.8	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%	49.3	43.6	----	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.25	%	71.9	70.1	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%	72.5	71.8	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%	65.1	68.7	----	----	----
Anthracene-d10	1719-06-8	0.25	%	83.9	85.1	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%	93.0	95.9	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	103	100	102	----	----
Toluene-D8	2037-26-5	2	%	101	96.4	97.3	----	----
4-Bromofluorobenzene	460-00-4	2	%	115	110	112	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Sampled by:	GHD (S. Allard)	Date/Time:	24/05/18 Am	Relinquished by:	S. Hillard	Date/Time:	24/05/18 Pm
Received by:	Core Shed Fridge	Date/Time:	24/05/18 Pm	Relinquished by:	Core Shed Fridge	Date/Time:	25/05/18 Am
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Bharathi (ALS)	Date/Time:	25/5/18 10:45 a				
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

Shirley LeCornu

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Monday, 28 May 2018 8:31 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: ON HOLD-EM1808553-GHD-31/35006/0910

Hi Shirley,

Please analyse:

- 1 1. NEL-BH156_0.1m = IWRG621
- 2 2. NEL-BH156_0.5m = IWRG621
- 4 3. NEL-BH194_0.2m = IWRG621
- 6 4. NEL-BH194_1.0m = IWRG621
- 8 5. RB112 = IWRG621 water equivalent
- 9 6. TB112 = Volatile TPH/BTEX
- 7 7. FB112 = IWRG621 water equivalent

At standard TAT. Thanks.

Nazuha Rosli
Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
mailto:nazuha.rosli@aecom.com

AECOM

Collins Square, Level 10, Tower Two, 727 Collins Street, Melbourne, VIC 3008 T +61 3 9653 1234 F +61 3 9654 7117
<https://apac01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.aecom.com&data=02%7C01%7Cshirley.lecornu%40alsglobal.com%7Caec6483f29524e1d172508d5c42197fb%7C485ca04e6f7440509764cdb4bfa89c25%7C0%7C0%7C636630570952463043&sdata=mQq%2BNhgYlwHSQb7zryf%2BAiBQ%2BaARWqR3wf3KUu6BUxQ%3D&reserved=0>

Built to deliver a better world

-----Original Message-----

From: Shirley LeCornu [mailto:shirley.lecornu@alsglobal.com]
Sent: Friday, 25 May 2018 3:11 PM
To: Rosli, Nazuha
Cc: David Quinn
Subject: FW: ON HOLD-EM1808553-GHD-31/35006/0910

Hi Nazuha

Please let me know analysis required for the attached, when you get a chance.

Thanks

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1808553**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: SH		

Dates

Date Samples Received	: 25-May-2018 10:45	Issue Date	: 30-May-2018
Client Requested Due Date	: 04-Jun-2018	Scheduled Reporting Date	: 04-Jun-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 1.2°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 9 / 7

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
FB112	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB112	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
FB112	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB112	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
FB112	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB112	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1808553-001	24-May-2018 00:00	NEL-BH156_0.1m		✓	✓
EM1808553-002	24-May-2018 00:00	NEL-BH156_0.5m		✓	✓
EM1808553-003	24-May-2018 00:00	NEL-BH156_1.0m	✓		
EM1808553-004	24-May-2018 00:00	NEL-BH194_0.2m		✓	✓
EM1808553-005	24-May-2018 00:00	NEL-BH194_0.5m	✓		
EM1808553-006	24-May-2018 00:00	NEL-BH194_1.0m		✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1808553-007	24-May-2018 00:00	FB112	✓	
EM1808553-008	24-May-2018 00:00	RB112	✓	
EM1808553-009	24-May-2018 00:00	TB112		✓

QUALITY CONTROL REPORT

Work Order	: EM1808553	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 25-May-2018
Order number	: ----	Date Analysis Commenced	: 30-May-2018
C-O-C number	: ----	Issue Date	: 04-Jun-2018
Sampler	: SH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 9		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1688649)									
EM1808553-001	NEL-BH156_0.1m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.9	6.9	0.00	0% - 20%
EM1808627-004	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.9	7.9	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1687423)									
EM1808553-001	NEL-BH156_0.1m	EA055: Moisture Content	----	0.1	%	15.8	16.1	1.84	0% - 50%
EM1808653-009	Anonymous	EA055: Moisture Content	----	0.1	%	23.3	23.9	2.85	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1687320)									
EM1808553-001	NEL-BH156_0.1m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	32	34	8.94	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	16	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	28	28	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	80	84	4.68	0% - 50%
EM1808653-055	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	89	77	15.4	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	11	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1687320) - continued									
EM1808653-055	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	34	26	24.7	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1687319)									
EM1808553-001	NEL-BH156_0.1m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1808653-055	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.7	0.6	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1690303)									
EM1808553-001	NEL-BH156_0.1m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808711-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1690992)									
EM1808547-031	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1808547-043	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1690993)									
EM1808553-002	NEL-BH156_0.5m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1808571-030	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1687506)									
EM1808553-001	NEL-BH156_0.1m	EK040T: Fluoride	16984-48-8	40	mg/kg	350	360	0.00	No Limit
EM1808712-014	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	320	310	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1687148)									
EM1808553-001	NEL-BH156_0.1m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1808713-005	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1686856)									
EM1808553-001	NEL-BH156_0.1m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1686856)									
EM1808553-001	NEL-BH156_0.1m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1686856)									
EM1808553-001	NEL-BH156_0.1m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1686856) - continued									
EM1808553-001	NEL-BH156_0.1m	EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1687146)									
EM1808553-001	NEL-BH156_0.1m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1808713-005	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1687146)									
EM1808553-001	NEL-BH156_0.1m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1687146) - continued									
EM1808553-001	NEL-BH156_0.1m	EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1808713-005	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1687146)							
EM1808553-001	NEL-BH156_0.1m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EM1808713-005	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5
EP075-EM: Acenaphthene	83-32-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Acenaphthylene	208-96-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Fluorene	86-73-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Phenanthrene	85-01-8			0.5	mg/kg	<0.5	0.6	0.00	No Limit
EP075-EM: Anthracene	120-12-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Fluoranthene	206-44-0			0.5	mg/kg	2.0	1.8	15.1	No Limit
EP075-EM: Pyrene	129-00-0			0.5	mg/kg	2.8	2.1	30.9	No Limit
EP075-EM: Benz(a)anthracene	56-55-3			0.5	mg/kg	1.8	1.4	27.4	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1687146) - continued									
EM1808713-005	Anonymous	EP075-EM: Chrysene	218-01-9	0.5	mg/kg	1.5	1.2	23.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	5.2	3.6	34.8	0% - 50%
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	3.2	2.2	38.5	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	1.8	1.2	36.5	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	2.2	1.4	39.7	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1687146)									
EM1808553-001	NEL-BH156_0.1m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1808713-005	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1687146) - continued									
EM1808713-005	Anonymous	EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1686856)									
EM1808553-001	NEL-BH156_0.1m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1687147)									
EM1808553-001	NEL-BH156_0.1m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1808713-005	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1686856)									
EM1808553-001	NEL-BH156_0.1m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1687147)									
EM1808553-001	NEL-BH156_0.1m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1808713-005	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	120	<100	22.4	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1690100)									
EM1808678-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.79	6.84	0.719	0% - 20%
EM1808678-012	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.19	7.18	0.139	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1687821)									
EM1808553-007	FB112	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1687823)									
EM1808553-007	FB112	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit

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 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1687823) - continued									
EM1808553-007	FB112	EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1687822)									
EM1808553-007	FB112	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1688687)									
EM1808553-007	FB112	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1687175)									
EM1807388-012	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1808646-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	3.70	3.70	0.222	0% - 20%
EK040P: Fluoride by PC Titrator (QC Lot: 1690101)									
EM1808678-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.00	No Limit
EM1808678-012	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1687852)									
EM1808553-007	FB112	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1687852)									
EM1808553-007	FB112	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1687852)									
EM1808553-007	FB112	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1687852)									
EM1808553-007	FB112	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit

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 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1687853)									
EM1808692-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1808553-007	FB112	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1687853)									
EM1808692-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1808553-007	FB112	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1687853)									
EM1808692-006	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1808553-007	FB112	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
		LCS	Low	High	
<5	21.7 mg/kg	95.0	79	113	
<1	4.64 mg/kg	89.7	85	109	
<5	32 mg/kg	91.3	78	108	
<5	40 mg/kg	92.2	78	106	
<2	7.9 mg/kg	88.9	86	112	
<2	55 mg/kg	100	82	111	
<5	5.37 mg/kg	97.1	93	109	
<2	2.1 mg/kg	83.1	80	108	
<5	5.2 mg/kg	91.5	88	116	
<5	60.8 mg/kg	101	82	111	
<0.1	2.57 mg/kg	79.0	77	104	
<0.5	40 mg/kg	95.5	75	112	
<1	20 mg/kg	99.5	80	110	
<1	20 mg/kg	96.6	80	110	
<40	400 mg/kg	90.0	77	106	
<0.1	1 mg/kg	95.5	63	118	
<0.2	2.1 mg/kg	92.8	74	118	
<0.5	2.1 mg/kg	122	70	124	
<0.5	2.1 mg/kg	96.2	71	122	
<0.5	4.2 mg/kg	96.5	70	118	
<0.5	2.1 mg/kg	96.3	76	116	
<0.5	2.1 mg/kg	100	74	114	
<1	0.6 mg/kg	96.6	77	111	



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1686856) - continued								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	72.2	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	84.9	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	93.0	68	107
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	90.5	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	92.0	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.5	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	88.5	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	85.1	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	94.5	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	86.1	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	# 130	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	107	64	124
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	96.1	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	97.9	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.5	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	89.9	73	117
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	81.5	69	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	85.8	75	114
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	85.6	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1687146)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	83.3	54	122
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	76.4	58	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	83.8	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	75.5	62	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	83.9	53	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	73.8	60	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	80.3	56	118
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	81.2	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	68.1	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1687146)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	79.5	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	81.6	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	87.8	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	75.7	53	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	93.4	43	120
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	100	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	100	59	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	77.6	47	125



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1687146) - continued								
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	87.1	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	75.2	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1687146)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	83.1	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	89.1	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	84.0	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	85.9	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	89.9	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	61.0	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	91.4	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	89.8	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	87.4	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	96.0	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	97.5	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	78.5	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	114	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	118	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	110	55	137
EP075I: Organochlorine Pesticides (QCLot: 1687146)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	83.6	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	81.7	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	84.5	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	83.9	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	90.3	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	86.9	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	89.2	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	90.8	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	93.0	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	91.2	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	95.3	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	90.8	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	91.5	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	94.0	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	# 21.4	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	92.7	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	93.0	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	93.9	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	91.6	59	134

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1687821)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	104	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1687823)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.7	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.3	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.3	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.4	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	95.9	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.4	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	102	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	95.7	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.4	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1687822)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	89.5	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1688687)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	100	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1687175)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	89.4	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1690101)								



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EK040P: Fluoride by PC Titrator (QCLot: 1690101) - continued								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	106	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1686792)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	61.3	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1687852)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	95.9	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1687852)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	104	64	139
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	95.8	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	98.3	81	144
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	94.6	73	121
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	96.3	78	120
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	93.3	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	90.1	66	119
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	94.6	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	94.4	70	120
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	94.6	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	93.4	75	119
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	91.2	75	112
EP074: 1.1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	99.1	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	95.8	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1687852)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	95.6	82	114
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	94.2	76	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	96.3	82	112
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	92.7	62	119
EP074G: Trihalomethanes (QCLot: 1687852)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	96.8	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1686793)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	78.8	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	84.0	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	85.9	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	89.5	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	90.0	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	108	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	92.7	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	90.4	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	94.6	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	90.8	55	123



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1686793) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	93.4	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	95.2	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	95.9	56	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	89.0	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	89.7	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	87.3	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1686790)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	89.8	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	77.1	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	91.1	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	80.3	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	92.0	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	82.0	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	96.0	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5	2	µg/L	<2	20 µg/L	96.2	47	125
	8-90-2							
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	95.3	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1686790)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	33.1	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	76.8	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	64.3	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	80.0	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	94.6	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	65.1	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	36.2	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	114	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	123	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	57.2	32	135
EP075I: Organochlorine Pesticides (QCLot: 1686790)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	94.6	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	93.2	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	89.9	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	90.6	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	96.0	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	99.1	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	91.7	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	93.3	62	136



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP075I: Organochlorine Pesticides (QCLot: 1686790) - continued								
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	95.0	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1686794)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	94.1	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	96.0	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	95.2	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1687853)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	90.3	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1686794)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	93.0	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	94.7	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	98.3	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1687853)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	89.2	66	123
EP080: BTEXN (QCLot: 1687853)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	89.4	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	92.7	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	93.0	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	97.0	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	100	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	93.9	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
					MS	Low	High
Client sample ID	Method: Compound	CAS Number					
EG005T: Total Metals by ICP-AES (QCLot: 1687320)							
EM1808553-002	NEL-BH156_0.5m	EG005T: Arsenic	7440-38-2	50 mg/kg	96.7	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	95.5	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	95.4	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	87.0	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	87.3	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	86.8	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	93.0	74	128



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1687319)							
EM1808553-002	NEL-BH156_0.5m	EG035T: Mercury	7439-97-6	5 mg/kg	92.6	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1690303)							
EM1808553-002	NEL-BH156_0.5m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	67.5	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1690992)							
EM1808547-033	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	112	77	113
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1690993)							
EM1808553-004	NEL-BH194_0.2m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	103	77	113
EK040T: Fluoride Total (QCLot: 1687506)							
EM1808553-002	NEL-BH156_0.5m	EK040T: Fluoride	16984-48-8	400 mg/kg	104	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1687148)							
EM1808553-006	NEL-BH194_1.0m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	94.5	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1686856)							
EM1808553-002	NEL-BH156_0.5m	EP074-UT: Benzene	71-43-2	2 mg/kg	89.2	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	108	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1686856)							
EM1808553-002	NEL-BH156_0.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	97.2	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	92.3	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	85.0	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1687146)							
EM1808553-002	NEL-BH156_0.5m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	88.0	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	69.5	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	52.3	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1687146)							
EM1808553-002	NEL-BH156_0.5m	EP075-EM: Phenol	108-95-2	1 mg/kg	77.8	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	67.1	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1687146)							
EM1808553-002	NEL-BH156_0.5m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	93.6	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	75.6	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1686856)							
EM1808553-002	NEL-BH156_0.5m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	94.5	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1687147)							
EM1808553-004	NEL-BH194_0.2m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	90.5	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	108	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	91.9	64	118

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 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1686856)							
EM1808553-002	NEL-BH156_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	88.9	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1687147)							
EM1808553-004	NEL-BH194_0.2m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	95.0	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	97.6	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	85.7	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1687823)							
EM1808553-007	FB112	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	91.4	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	89.0	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	90.0	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.2	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	90.9	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	91.2	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1687822)							
EM1808553-008	RB112	EG035F: Mercury	7439-97-6	0.01 mg/L	88.3	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1688687)							
EM1808553-008	RB112	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	107	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1687175)							
EM1807388-013	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	93.2	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1690101)							
EM1808663-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	110	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1687852)							
EM1808553-008	RB112	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	80.9	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	79.3	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1687852)							
EM1808553-008	RB112	EP074: Chlorobenzene	108-90-7	20 µg/L	80.5	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1687853)							
EM1808553-008	RB112	EP080: C6 - C9 Fraction	----	280 µg/L	59.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1687853)							
EM1808553-008	RB112	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	60.8	44	122
EP080: BTEXN (QCLot: 1687853)							
EM1808553-008	RB112	EP080: Benzene	71-43-2	20 µg/L	79.1	68	130
		EP080: Toluene	108-88-3	20 µg/L	80.0	72	132

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Client : GHD PTY LTD
Project : 31350060910



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1808553	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 25-May-2018
Site	: ----	Issue Date	: 04-Jun-2018
Sampler	: SH	No. of samples received	: 9
Order number	:	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Matrix Spike outliers occur.
- Laboratory Control outliers exist - please see following pages for full details.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP074I: Volatile Halogenated Compounds	QC-1686856-001	----	1.1.2-Trichloroethane	79-00-5	130 %	74-122%	Recovery greater than upper control limit
EP075I: Organochlorine Pesticides	QC-1687146-001	----	Endrin	72-20-8	21.4 %	55-148%	Recovery less than lower control limit

Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075S: Acid Extractable Surrogates	EM1808553-007	FB112	2.4.6-Tribromophenol	118-79-6	49.3 %	52-140 %	Recovery less than lower data quality objective
EP075S: Acid Extractable Surrogates	EM1808553-008	RB112	2.4.6-Tribromophenol	118-79-6	43.6 %	52-140 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method			Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural								
FB112,	RB112		----	----	----	31-May-2018	24-May-2018	7

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	31-May-2018	31-May-2018	✓	31-May-2018	31-May-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	----	----	----	30-May-2018	07-Jun-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	20-Nov-2018	✓	30-May-2018	20-Nov-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	21-Jun-2018	✓	31-May-2018	21-Jun-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	31-May-2018	21-Jun-2018	✓	31-May-2018	07-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	31-May-2018	07-Jun-2018	✓	01-Jun-2018	14-Jun-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	21-Jun-2018	✓	01-Jun-2018	21-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	09-Jul-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	31-May-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	31-May-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	31-May-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	09-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	09-Jul-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	09-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	09-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	31-May-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH156_0.1m, NEL-BH194_0.2m,	NEL-BH156_0.5m, NEL-BH194_1.0m	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	31-May-2018	✓

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
FB112,	RB112	24-May-2018	----	----	----	31-May-2018	24-May-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)								
FB112,	RB112	24-May-2018	----	----	----	30-May-2018	20-Nov-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)								
FB112,	RB112	24-May-2018	----	----	----	30-May-2018	07-Jun-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)								
FB112,	RB112	24-May-2018	----	----	----	30-May-2018	21-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)								
FB112,	RB112	24-May-2018	----	----	----	30-May-2018	07-Jun-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)								
FB112,	RB112	24-May-2018	----	----	----	31-May-2018	21-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)								
FB112,	RB112	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	09-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB112,	RB112	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	07-Jun-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB112,	RB112	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	07-Jun-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB112,	RB112	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	07-Jun-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)								
FB112,	RB112	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	07-Jun-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
FB112,	RB112	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	09-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)								
FB112,	RB112	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	09-Jul-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB112,	RB112	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	09-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) FB112,	RB112	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	09-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) FB112,	RB112	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	09-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB112, TB112	RB112,	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	07-Jun-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) FB112,	RB112	24-May-2018	30-May-2018	31-May-2018	✓	30-May-2018	09-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB112, TB112	RB112,	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	07-Jun-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) FB112, TB112	RB112,	24-May-2018	30-May-2018	07-Jun-2018	✓	30-May-2018	07-Jun-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	3	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1808781**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **SH/MLN**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **6**
No. of samples analysed : **6**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 30-May-2018 11:45
Date Analysis Commenced : 01-Jun-2018
Issue Date : 06-Jun-2018 15:01



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH007_0.2m	NEL-EF-BH007_0.5m	NEL-EF-BH011_0.2m	----	----
Client sampling date / time					28-May-2018 00:00	28-May-2018 00:00	28-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808781-001	EM1808781-002	EM1808781-003	-----	-----
				Result	Result	Result	Result	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		5.3	7.1	5.4	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		18.8	14.2	22.0	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	9	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Copper	7440-50-8	5	mg/kg		11	24	12	----	----
Lead	7439-92-1	5	mg/kg		42	34	16	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg		16	51	23	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	----	----
Zinc	7440-66-6	5	mg/kg		46	70	36	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		230	540	200	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-EF-BH007_0.2m	NEL-EF-BH007_0.5m	NEL-EF-BH011_0.2m	----	----
Client sampling date / time				28-May-2018 00:00	28-May-2018 00:00	28-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808781-001	EM1808781-002	EM1808781-003	-----	-----
				Result	Result	Result	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH007_0.2m	NEL-EF-BH007_0.5m	NEL-EF-BH011_0.2m	----	----
Client sampling date / time					28-May-2018 00:00	28-May-2018 00:00	28-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808781-001	EM1808781-002	EM1808781-003	-----	-----
					Result	Result	Result	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH007_0.2m	NEL-EF-BH007_0.5m	NEL-EF-BH011_0.2m	----	----
Client sampling date / time					28-May-2018 00:00	28-May-2018 00:00	28-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808781-001	EM1808781-002	EM1808781-003	-----	-----
					Result	Result	Result	----	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH007_0.2m	NEL-EF-BH007_0.5m	NEL-EF-BH011_0.2m	----	----
Client sampling date / time					28-May-2018 00:00	28-May-2018 00:00	28-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808781-001	EM1808781-002	EM1808781-003	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		114	110	95.2	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		78.9	60.4	75.7	----	----
Toluene-D8	2037-26-5	0.1	%		70.1	55.3	69.6	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		59.1	66.3	74.2	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		104	108	112	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		79.1	79.6	77.0	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		98.9	93.1	104	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		91.3	97.1	106	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		85.8	88.3	84.6	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		106	80.9	77.9	----	----
Anthracene-d10	1719-06-8	0.025	%		104	101	102	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		114	107	110	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB113	FB113	TB113	----	----
Client sampling date / time				28-May-2018 00:00	28-May-2018 00:00	28-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808781-004	EM1808781-005	EM1808781-006	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.44	6.80	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB113	FB113	TB113	----	----
Client sampling date / time					28-May-2018 00:00	28-May-2018 00:00	28-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808781-004	EM1808781-005	EM1808781-006	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2,4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB113	FB113	TB113	----	----
Client sampling date / time				28-May-2018 00:00	28-May-2018 00:00	28-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808781-004	EM1808781-005	EM1808781-006	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB113	FB113	TB113	----	----
Client sampling date / time					28-May-2018 00:00	28-May-2018 00:00	28-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808781-004	EM1808781-005	EM1808781-006	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		80.4	89.9	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		80.9	97.7	----	----	----
Toluene-D8	2037-26-5	5	%		77.3	116	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		96.7	119	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		26.0	29.8	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		61.2	74.0	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		64.7	71.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		75.0	92.3	----	----	----
Anthracene-d10	1719-06-8	1.0	%		85.1	100	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		97.5	111	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB113	FB113	TB113	----	----
Client sampling date / time					28-May-2018 00:00	28-May-2018 00:00	28-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808781-004	EM1808781-005	EM1808781-006	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		35.4	30.2	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		85.2	75.0	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		87.6	78.3	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		79.2	72.8	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		95.5	88.8	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		102	93.8	----	----	----
Anthracene-d10	1719-06-8	0.25	%		102	92.4	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		106	96.3	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		81.2	98.1	94.7	----	----
Toluene-D8	2037-26-5	2	%		78.0	95.7	71.0	----	----
4-Bromofluorobenzene	460-00-4	2	%		79.6	98.9	116	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Sampled by:	SH/MLM (GHD)	Date/Time:	28/05/18 AM	Relinquished by:	SH (GHD)	Date/Time:	28/05/18 PM
Received by:	Core Shed Fridge	Date/Time:	28/05/18 PM	Relinquished by:	Core Shed Fridge	Date/Time:	30/05/18 AM
Received by Courier:		Date/Time:	30/5/2018	Relinquished by:		Date/Time:	
Received by Lab:	BARRY SMITH	Date/Time:	11:00 AM				
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

~~12/18~~

Shirley LeCornu

From: Rosli, Nazuha <nazuha.rosli@aecom.com>
Sent: Thursday, 31 May 2018 9:40 AM
To: Shirley LeCornu
Cc: David Quinn; Menon, Venesa
Subject: RE: CoC for ALS Workorder : EM1808781 | Overall Description: NO ANALYSIS

Hi Shirley,

Please analyse:

- 1 1. NEL-EF-BH007_0.2m = IWRG621
- 2 2. NEL-EF-BH007_0.5m = IWRG621
- 3 3. NEL-EF-BH011_0.2m = IWRG621
- 4 * 4. NEL-BH194_1.0m = IWRG621 * → EM1808553
- 5 5. RB113 = IWRG621 water equivalent
- 6 6. TB113 = Volatile TPH/BTEX
- 5 7. FB113 = IWRG621 water equivalent

At standard TAT. Thanks.

Nazuha Rosli

Senior Environmental Engineer
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From: David Quinn [mailto:David.Quinn@ghd.com]
Sent: Thursday, 31 May 2018 9:36 AM
To: Rosli, Nazuha
Subject: FW: CoC for ALS Workorder : EM1808781 | Overall Description: NO ANALYSIS

FYI

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Thursday, 31 May 2018 9:30 AM

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1808781

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : ----</p> <p>Sampler : SH/MLN</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 3</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

Date Samples Received : 30-May-2018 11:45	Issue Date : 01-Jun-2018
Client Requested Due : 07-Jun-2018	Scheduled Reporting Date : 07-Jun-2018
Date : ----	

Delivery Details

Mode of Delivery : Carrier	Security Seal : Intact.
No. of coolers/boxes : 1	Temperature : 3.2°C - Ice present
Receipt Detail : ----	No. of samples received / analysed : 6 / 6

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB113	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB113	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB113	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB113	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB113	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB113	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1808781-001	28-May-2018 00:00	NEL-EF-BH007_0.2m	✓	✓
EM1808781-002	28-May-2018 00:00	NEL-EF-BH007_0.5m	✓	✓
EM1808781-003	28-May-2018 00:00	NEL-EF-BH011_0.2m	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1808781-004	28-May-2018 00:00	RB113	✓	
EM1808781-005	28-May-2018 00:00	FB113	✓	
EM1808781-006	28-May-2018 00:00	TB113		✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

QUALITY CONTROL REPORT

Work Order	: EM1808781	Page	: 1 of 21
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 30-May-2018
Order number	: ----	Date Analysis Commenced	: 01-Jun-2018
C-O-C number	: ----	Issue Date	: 06-Jun-2018
Sampler	: SH/MLN		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 6		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1697602)									
EM1808772-027	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.5	6.8	4.51	0% - 20%
EM1808772-037	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.6	8.9	3.43	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1695045)									
EM1808781-001	NEL-EF-BH007_0.2m	EA055: Moisture Content	----	0.1	%	18.8	18.8	0.00	0% - 50%
EM1808859-008	Anonymous	EA055: Moisture Content	----	0.1	%	12.2	11.3	8.05	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1697584)									
EM1808781-001	NEL-EF-BH007_0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	12	22.2	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	10	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	42	48	14.9	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	46	46	0.00	No Limit
EM1808896-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	5	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	12	48.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	10	11.7	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1697584) - continued									
EM1808896-003	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	10	7	38.4	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1697583)									
EM1808781-001	NEL-EF-BH007_0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1808896-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1697605)									
EM1808781-001	NEL-EF-BH007_0.2m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808859-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1698304)									
EM1808781-001	NEL-EF-BH007_0.2m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1808857-029	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1694827)									
EM1808781-001	NEL-EF-BH007_0.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	230	210	7.34	No Limit
EM1808898-003	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	240	250	4.54	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1694791)									
EM1808781-001	NEL-EF-BH007_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1808894-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1694763)									
EM1808781-001	NEL-EF-BH007_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808898-005	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1694763)									
EM1808781-001	NEL-EF-BH007_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1808898-005	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1694763)									
EM1808781-001	NEL-EF-BH007_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1694763) - continued									
EM1808781-001	NEL-EF-BH007_0.2m	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1808898-005	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1694789)							
EM1808781-001	NEL-EF-BH007_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1694789) - continued									
EM1808781-001	NEL-EF-BH007_0.2m	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1808894-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.06	<0.06	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1694789)									
EM1808781-001	NEL-EF-BH007_0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1808894-002	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EM1808781-001	NEL-EF-BH007_0.2m	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1694789)									
EM1808781-001	NEL-EF-BH007_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1694789) - continued									
EM1808781-001	NEL-EF-BH007_0.2m	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808894-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	1.3	1.6	27.1	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	0.6	1.0	39.6	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	4.3	6.7	43.8	0% - 50%
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	4.4	7.2	47.4	0% - 50%
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	2.6	4.3	47.6	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	2.5	4.0	47.5	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	4.4	7.1	47.8	0% - 50%
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	2.5	4.1	49.7	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	1.1	1.9	52.0	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	0.6	18.8	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	1.2	2.0	51.2	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1694789)									
EM1808781-001	NEL-EF-BH007_0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1694789) - continued									
EM1808781-001	NEL-EF-BH007_0.2m	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1808894-002	Anonymous	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1694763)									
EM1808781-001	NEL-EF-BH007_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1808898-005	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1694790)									
EM1808781-001	NEL-EF-BH007_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1808894-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	150	39.7	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	150	240	42.7	No Limit

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 Work Order : EM1808781
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1694790) - continued									
EM1808894-002	Anonymous	EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1694763)									
EM1808781-001	NEL-EF-BH007_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1808898-005	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1694790)									
EM1808781-001	NEL-EF-BH007_0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1808894-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	190	320	53.4	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	100	160	40.0	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1697489)									
EM1808766-010	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.08	7.04	0.566	0% - 20%
EM1808851-009	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.01	7.00	0.143	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1694529)									
EM1808781-004	RB113	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.002	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1694531)									
EM1808781-004	RB113	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1808851-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.166	0.169	1.92	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.004	0.005	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.006	0.007	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 1694530)									
EM1808781-004	RB113	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1808851-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1699120)									
EM1808678-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1808678-010	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1699121)									
EM1808781-005	FB113	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1697889)									
EM1808755-004	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1808749-002	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.374	0.401	6.87	0% - 20%
EK040P: Fluoride by PC Titrator (QC Lot: 1697482)									
EM1808766-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.00	No Limit
EM1808766-010	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.4	0.4	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1695271)									
EM1808924-003	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1808781-005	FB113	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1695271)									
EM1808924-003	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1808781-005	FB113	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1695271) - continued									
EM1808781-005	FB113	EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1695271)									
EM1808924-003	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1808781-005	FB113	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1695271)									
EM1808924-003	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1808781-005	FB113	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1695270)									
EM1808924-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	740	670	9.95	0% - 20%
EM1808781-005	FB113	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1697300)									
EM1808886-021	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	370	340	8.54	0% - 50%
EM1808902-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1695270)									
EM1808924-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	700	630	9.61	0% - 20%
EM1808781-005	FB113	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1697300)									
EM1808886-021	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	390	360	7.49	0% - 50%
EM1808902-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1695270)									
EM1808924-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	347	366	5.52	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	84	75	10.5	0% - 20%
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1808781-005	FB113	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit

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 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1695270) - continued									
EM1808781-005	FB113	EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080: BTEXN (QC Lot: 1697300)									
EM1808886-021	Anonymous	EP080: Benzene	71-43-2	1	µg/L	24	22	9.17	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	19	14	29.9	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	50	50	0.00	0% - 20%
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	86	86	0.00	0% - 20%
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	41	37	10.8	0% - 20%
		EP080: Naphthalene	91-20-3	5	µg/L	9	9	0.00	No Limit
EM1808902-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1697584)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	92.5	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	94.7	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	90.0	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	90.2	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	88.8	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	94.5	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	100	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.2	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	91.4	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	96.4	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1697583)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	78.6	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1697605)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	89.6	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1698304)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	92.2	80	110
EK040T: Fluoride Total (QCLot: 1694827)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	98.5	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1694791)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	92.8	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1694763)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	85.7	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	83.7	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	83.7	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	83.6	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	95.9	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	86.8	74	114
EP074H: Naphthalene (QCLot: 1694763)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	89.6	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1694763)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	110	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	114	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1694763) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	# 120	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	81.0	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	85.2	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	82.4	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	77.6	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	78.9	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	98.8	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	82.0	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	87.3	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	79.5	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	82.8	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	104	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	71.1	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	93.1	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.4	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	95.4	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	76.3	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1694789)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	75.6	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	69.0	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	78.4	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	64.7	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	81.8	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	74.3	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	94.6	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	92.8	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	52.0	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1694789)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	69.7	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	74.1	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	73.5	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	71.0	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	85.4	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	99.1	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	101	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	114	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	120	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	91.5	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1694789)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	81.1	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	79.8	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	94.0	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	# 124	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	92.7	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	60.8	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	87.7	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	84.2	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	84.1	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	89.5	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	91.9	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	85.4	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	80.6	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	83.4	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	85.4	55	137
EP075I: Organochlorine Pesticides (QCLot: 1694789)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	105	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	113	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	119	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	106	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	74.2	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	85.7	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	92.0	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	100	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	102	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	116	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	78.4	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	81.6	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	91.1	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	98.6	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	61.6	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	84.8	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	86.5	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	79.4	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	86.0	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	96.5	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1694763)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	75.6	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1694529)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	103	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1694531)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	106	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	101	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.7	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	102	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	104	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.6	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	105	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	108	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1694530)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	97.8	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1699120)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	98.4	90	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1699121)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	102	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1697889)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	95.3	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1697482)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	101	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1694399)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1694399) - continued								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	84.6	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1695271)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	105	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1695271)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	130	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	# 126	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	118	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	119	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	112	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	116	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	116	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	104	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	114	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	103	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	117	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	105	75	112
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	97.7	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	116	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1695271)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	109	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	106	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	103	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	108	62	119
EP074G: Trihalomethanes (QCLot: 1695271)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	111	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1694400)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	88.9	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	87.7	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	90.6	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	91.7	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	92.0	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	104	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.7	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	94.0	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	94.5	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	94.8	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	99.0	52	131
	205-82-3							

Laboratory Control Spike (LCS) Report

Recovery Limits (%)

High

EP080/071: Total Petroleum Hydrocarbons (QCLot: 1694401)



Sub-Matrix: **WATER**

Method Blank (MB) Report				Laboratory Control Spike (LCS) Report				
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
					LCS	Low	High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1694401) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	98.6	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	98.8	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	96.8	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1695270)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	106	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1697300)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	96.3	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1694401)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	96.7	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	97.5	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	98.3	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1695270)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	105	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1697300)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	97.4	66	123
EP080: BTEXN (QCLot: 1695270)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	106	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	107	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	105	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	107	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	106	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	102	74	124
EP080: BTEXN (QCLot: 1697300)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	88.7	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	86.6	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	107	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	113	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	111	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	97.0	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report		
Spike	SpikeRecovery(%)	Recovery Limits (%)



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1697584)							
EM1808781-002	NEL-EF-BH007_0.5m	EG005T: Arsenic	7440-38-2	50 mg/kg	92.9	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	85.2	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	95.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	111	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	83.3	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	114	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	83.5	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	79.3	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1697583)							
EM1808781-002	NEL-EF-BH007_0.5m	EG035T: Mercury	7439-97-6	5 mg/kg	85.2	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1697605)							
EM1808781-002	NEL-EF-BH007_0.5m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	62.6	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1698304)							
EM1808781-002	NEL-EF-BH007_0.5m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	90.4	77	113
EK040T: Fluoride Total (QCLot: 1694827)							
EM1808781-002	NEL-EF-BH007_0.5m	EK040T: Fluoride	16984-48-8	400 mg/kg	98.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1694791)							
EM1808838-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	117	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1694763)							
EM1808781-002	NEL-EF-BH007_0.5m	EP074-UT: Benzene	71-43-2	2 mg/kg	86.7	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	85.4	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1694763)							
EM1808781-002	NEL-EF-BH007_0.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	125	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	78.6	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	94.0	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1694789)							
EM1808781-002	NEL-EF-BH007_0.5m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	87.1	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	70.0	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	48.8	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1694789)							
EM1808781-002	NEL-EF-BH007_0.5m	EP075-EM: Phenol	108-95-2	1 mg/kg	65.1	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	35.4	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1694789)							
EM1808781-002	NEL-EF-BH007_0.5m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	88.5	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	89.7	27	169

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1694763)							
EM1808781-002	NEL-EF-BH007_0.5m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	70.2	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1694790)							
EM1808781-003	NEL-EF-BH011_0.2m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	96.5	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	106	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	93.2	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1694763)							
EM1808781-002	NEL-EF-BH007_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	70.3	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1694790)							
EM1808781-003	NEL-EF-BH011_0.2m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	93.3	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	99.6	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	93.1	44	126

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1694531)							
EM1808781-004	RB113	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	100	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	98.6	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	91.3	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	96.6	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.0	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	96.5	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1694530)							
EM1808781-005	FB113	EG035F: Mercury	7439-97-6	0.01 mg/L	94.5	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1699120)							
EM1808678-011	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	94.0	59	127
EG050F: Dissolved Hexavalent Chromium (QCLot: 1699121)							
EM1808841-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	109	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1697889)							
EM1808749-003	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	94.9	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1697482)							
EM1808766-002	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	104	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1695271)							
EM1808781-004	RB113	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	98.6	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	86.1	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1695271)							



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074F: Halogenated Aromatic Compounds (QCLot: 1695271) - continued							
EM1808781-004	RB113	EP074: Chlorobenzene	108-90-7	20 µg/L	98.4	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1695270)							
EM1808781-004	RB113	EP080: C6 - C9 Fraction	----	280 µg/L	67.6	43	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1697300)							
EM1808827-001	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	63.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1695270)							
EM1808781-004	RB113	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	65.9	44	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1697300)							
EM1808827-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	62.7	44	122
EP080: BTEXN (QCLot: 1695270)							
EM1808781-004	RB113	EP080: Benzene	71-43-2	20 µg/L	84.9	68	130
		EP080: Toluene	108-88-3	20 µg/L	79.8	72	132
EP080: BTEXN (QCLot: 1697300)							
EM1808827-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	83.8	68	130
		EP080: Toluene	108-88-3	20 µg/L	80.4	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1808781**

Page : 1 of 13

Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Project : **31350060910**
Site : **----**
Sampler : **SH/MLN**
Order number :

Laboratory : **Environmental Division Melbourne**
Telephone : **+61-3-8549 9630**
Date Samples Received : **30-May-2018**
Issue Date : **06-Jun-2018**
No. of samples received : **6**
No. of samples analysed : **6**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank** value outliers occur.
- **NO Duplicate** outliers occur.
- **NO Matrix Spike** outliers occur.
- Laboratory Control outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP074I: Volatile Halogenated Compounds	QC-1694763-001	----	Methylene chloride	75-09-2	120 %	68-107%	Recovery greater than upper control limit
EP075B: Polynuclear Aromatic Hydrocarbons	QC-1694789-001	----	Fluorene	86-73-7	124 %	64-122%	Recovery greater than upper control limit

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP074E: Halogenated Aliphatic Compounds	QC-1695271-001	----	1,1-Dichloroethene	75-35-4	126 %	65-124%	Recovery greater than upper control limit

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural RB113, FB113		----	----	----	04-Jun-2018	28-May-2018	7

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	04-Jun-2018	04-Jun-2018	✓	04-Jun-2018	04-Jun-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	----	----	----	01-Jun-2018	11-Jun-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	04-Jun-2018	24-Nov-2018	✓	04-Jun-2018	24-Nov-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	04-Jun-2018	25-Jun-2018	✓	05-Jun-2018	25-Jun-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	04-Jun-2018	25-Jun-2018	✓	04-Jun-2018	11-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	04-Jun-2018	11-Jun-2018	✓	05-Jun-2018	18-Jun-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	25-Jun-2018	✓	05-Jun-2018	25-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	11-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	04-Jun-2018	✓	01-Jun-2018	04-Jun-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	04-Jun-2018	✓	01-Jun-2018	04-Jun-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	04-Jun-2018	✓	01-Jun-2018	04-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	11-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	11-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	11-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	11-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	04-Jun-2018	✓	01-Jun-2018	04-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	11-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	04-Jun-2018	✓	01-Jun-2018	04-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-EF-BH007_0.2m, NEL-EF-BH011_0.2m	NEL-EF-BH007_0.5m,	28-May-2018	01-Jun-2018	11-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	FB113	28-May-2018	----	----	----	04-Jun-2018	28-May-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)	FB113	28-May-2018	----	----	----	05-Jun-2018	24-Nov-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)	FB113	28-May-2018	----	----	----	04-Jun-2018	11-Jun-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	FB113	28-May-2018	----	----	----	04-Jun-2018	25-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)	FB113	28-May-2018	----	----	----	04-Jun-2018	11-Jun-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	FB113	28-May-2018	----	----	----	04-Jun-2018	25-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)	FB113	28-May-2018	01-Jun-2018	04-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)	FB113	28-May-2018	01-Jun-2018	11-Jun-2018	✓	01-Jun-2018	11-Jun-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB113	28-May-2018	01-Jun-2018	11-Jun-2018	✓	01-Jun-2018	11-Jun-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB113	28-May-2018	01-Jun-2018	11-Jun-2018	✓	01-Jun-2018	11-Jun-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)	FB113	28-May-2018	01-Jun-2018	11-Jun-2018	✓	01-Jun-2018	11-Jun-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))	FB113	28-May-2018	01-Jun-2018	04-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)	FB113	28-May-2018	01-Jun-2018	04-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB113,	FB113	28-May-2018	01-Jun-2018	04-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB113,	FB113	28-May-2018	01-Jun-2018	04-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB113,	FB113	28-May-2018	01-Jun-2018	04-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB113,	FB113	28-May-2018	01-Jun-2018	11-Jun-2018	✓	01-Jun-2018	11-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB113		28-May-2018	04-Jun-2018	11-Jun-2018	✓	04-Jun-2018	11-Jun-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB113,	FB113	28-May-2018	01-Jun-2018	04-Jun-2018	✓	04-Jun-2018	11-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB113,	FB113	28-May-2018	01-Jun-2018	11-Jun-2018	✓	01-Jun-2018	11-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB113		28-May-2018	04-Jun-2018	11-Jun-2018	✓	04-Jun-2018	11-Jun-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RB113,	FB113	28-May-2018	01-Jun-2018	11-Jun-2018	✓	01-Jun-2018	11-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB113		28-May-2018	04-Jun-2018	11-Jun-2018	✓	04-Jun-2018	11-Jun-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	32	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1808885**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **7**
No. of samples analysed : **5**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 31-May-2018 17:10
Date Analysis Commenced : 13-Jun-2018
Issue Date : 20-Jun-2018 14:25



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
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General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH155_0.2m	NEL-BH155_1.0m	----	----	----
Client sampling date / time					31-May-2018 00:00	31-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1808885-001	EM1808885-003	-----	-----	-----
					Result	Result	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		5.9	5.8	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		9.3	23.9	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	8	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		11	19	----	----	----
Lead	7439-92-1	5	mg/kg		16	24	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		19	46	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		22	44	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		230	560	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH155_0.2m	NEL-BH155_1.0m	----	----	----
Client sampling date / time					31-May-2018 00:00	31-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1808885-001	EM1808885-003	-----	-----	-----
				Result	Result		----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH155_0.2m	NEL-BH155_1.0m	----	----	----
Client sampling date / time				31-May-2018 00:00	31-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1808885-001	EM1808885-003	-----	-----	-----
				Result	Result	----	----	----

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH155_0.2m	NEL-BH155_1.0m	----	----	----
Client sampling date / time				31-May-2018 00:00	31-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1808885-001	EM1808885-003	-----	-----	-----
				Result	Result	----	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH155_0.2m	NEL-BH155_1.0m	----	----	----
Client sampling date / time					31-May-2018 00:00	31-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1808885-001	EM1808885-003	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		109	93.4	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		72.2	69.9	----	----	----
Toluene-D8	2037-26-5	0.1	%		59.2	63.1	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		68.8	90.3	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		102	96.6	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		85.3	79.0	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		107	92.5	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		87.4	84.6	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		91.6	82.4	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		104	88.3	----	----	----
Anthracene-d10	1719-06-8	0.025	%		107	91.4	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		127	107	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB114	RB114	FB114	----	----
Client sampling date / time					31-May-2018 00:00	31-May-2018 00:00	31-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808885-005	EM1808885-006	EM1808885-007	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		----	6.11	9.02	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		----	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		----	<0.0001	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L		----	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L		----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L		----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L		----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L		----	<0.01	<0.01	----	----
Tin	7440-31-5	0.001	mg/L		----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L		----	<0.005	<0.005	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	<0.0001	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		----	<0.01	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		----	<0.004	<0.004	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		----	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		----	<1	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		----	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		----	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		----	<5	<5	----	----
Methylene chloride	75-09-2	5	µg/L		----	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		----	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		----	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		----	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		----	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		----	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L		----	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				TB114	RB114	FB114	----	----
Client sampling date / time				31-May-2018 00:00	31-May-2018 00:00	31-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808885-005	EM1808885-006	EM1808885-007	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	----	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	----	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	----	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	----	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	----	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	----	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	----	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	----	<5	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	----	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	----	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	----	<2	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	----	<2	<2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				TB114	RB114	FB114	----	----
Client sampling date / time				31-May-2018 00:00	31-May-2018 00:00	31-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1808885-005	EM1808885-006	EM1808885-007	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	----	<2	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	----	<4	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	----	<2	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	----	<2	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	----	<2	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	----	<2	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	----	<2	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	----	<4	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	----	<4	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	----	<4	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	----	<4	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	----	<4	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	----	<100	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	----	<50	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	----	<50	<50	----	----
Dinoseb	88-85-7	50	µg/L	----	<50	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	----	<50	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	----	<0.5	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	----	<0.5	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	----	<0.5	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	<0.5	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	----	<0.5	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB114	RB114	FB114	----	----
Client sampling date / time					31-May-2018 00:00	31-May-2018 00:00	31-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808885-005	EM1808885-006	EM1808885-007	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		----	102	102	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		----	88.2	88.7	----	----
Toluene-D8	2037-26-5	5	%		----	83.2	83.5	----	----
4-Bromofluorobenzene	460-00-4	5	%		----	85.9	89.2	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	34.1	33.6	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	81.4	80.1	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	73.2	69.8	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	96.8	94.4	----	----
Anthracene-d10	1719-06-8	1.0	%		----	100.0	99.7	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	113	113	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB114	RB114	FB114	----	----
Client sampling date / time					31-May-2018 00:00	31-May-2018 00:00	31-May-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1808885-005	EM1808885-006	EM1808885-007	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		----	32.1	37.2	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		----	75.4	86.5	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		----	71.8	86.3	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		----	88.5	104	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		----	86.9	102	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		----	88.2	106	----	----
Anthracene-d10	1719-06-8	0.25	%		----	87.8	110	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		----	99.0	126	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		85.8	84.5	84.1	----	----
Toluene-D8	2037-26-5	2	%		92.4	82.9	83.2	----	----
4-Bromofluorobenzene	460-00-4	2	%		103	99.4	102	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Tuesday, 12 June 2018 2:35 PM
To: Shirley LeCornu
Cc: Kory.Auch@ghd.com
Subject: RE: ON HOLD-EM1808885-GHD-31/35006/0910

Hi Shirley

Please analyse the below all at standard TAT and please include Mark Clough and Kory Auch as recipients for the results.

1. NEL-BH155_0.2m = IWRG621 ①
2. NEL-BH155_1.0m = IWRG621 ②
3. RB114 = IWRG621 water equivalent
4. TB114 = Volatile TPH/BTEX
5. FB114 = IWRG621 water equivalent

Thanks

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance GHD Proudly employee owned
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<https://apac01.safelinks.protection.outlook.com/?url=www.ghd.com&data=02%7C01%7Cshirley.lecornu%40alsglobal.com%7C524341b1682d4e1d6faf08d5d01e032e%7C485ca04e6f7440509764cdb4bfa89c25%7C0%7C0%7C636643749712616593&sdata=mYi0PQTmh1wp3MS4nOaaG1GAH8A9kp6j7XMt0nXodlo%3D&reserved=0>
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Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the Inside Waste Consultants Review

Please consider our environment before printing this email

-----Original Message-----

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Tuesday, 12 June 2018 10:40 AM
To: Nazuha Rosli (InTouch) <nazuha.rosli@aecom.com>
Cc: David Quinn <David.Quinn@ghd.com>
Subject: RE: ON HOLD-EM1808885-GHD-31/35006/0910

Hi Nazuha

The attached samples are still on hold at the lab. Can you please let me know if analysis is required.

QUALITY CONTROL REPORT

Work Order	: EM1808885	Page	: 1 of 17
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 31-May-2018
Order number	: ----	Date Analysis Commenced	: 13-Jun-2018
C-O-C number	: ----	Issue Date	: 20-Jun-2018
Sampler	: ----		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 7		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1723369)									
EM1808885-001	NEL-BH155_0.2m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	5.9	5.8	1.71	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1726270)									
EM1808885-001	NEL-BH155_0.2m	EA055: Moisture Content	----	0.1	%	9.3	9.7	4.23	No Limit
EM1809430-023	Anonymous	EA055: Moisture Content	----	0.1	%	8.4	7.7	9.09	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1727147)									
EM1809136-048	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	19	16	17.7	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	11	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	9	14.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	14	11	17.3	No Limit
EM1808885-001	NEL-BH155_0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	19	25	27.7	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	12	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	13	17.7	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit

Page : 3 of 17
 Work Order : EM1808885
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1727147) - continued									
EM1808885-001	NEL-BH155_0.2m	EG005T: Zinc	7440-66-6	5	mg/kg	22	24	8.63	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1727146)									
EM1808885-001	NEL-BH155_0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809209-098	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1727889)									
EM1808885-001	NEL-BH155_0.2m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809367-008	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1726920)									
EM1808885-001	NEL-BH155_0.2m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809099-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1727706)									
EM1808885-001	NEL-BH155_0.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	230	230	0.00	No Limit
EM1809353-030	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	220	240	8.55	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1723395)									
EM1808885-001	NEL-BH155_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1723391)									
EM1808885-001	NEL-BH155_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1723391)									
EM1808885-001	NEL-BH155_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1723391)									
EM1808885-001	NEL-BH155_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1723391) - continued									
EM1808885-001	NEL-BH155_0.2m	EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1723392)									
EM1808885-001	NEL-BH155_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1723392)									
EM1808885-001	NEL-BH155_0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1723392)									
EM1808885-001	NEL-BH155_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1723392) - continued									
EM1808885-001	NEL-BH155_0.2m	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1723392)									
EM1808885-001	NEL-BH155_0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1723391)									
EM1808885-001	NEL-BH155_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1723394)									
EM1808885-001	NEL-BH155_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1723391)									
EM1808885-001	NEL-BH155_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1723394)									
EM1808885-001	NEL-BH155_0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

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 Work Order : EM1808885
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1723394) - continued									
EM1808885-001	NEL-BH155_0.2m	EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1725827)									
EM1808885-007	FB114	EA005-P: pH Value	----	0.01	pH Unit	9.02	8.38	7.36	0% - 20%
EM1809320-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	9.05	9.10	0.551	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1727271)									
EM1808885-006	RB114	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1727273)									
EM1809336-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.022	0.023	0.00	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.010	0.010	0.00	0% - 50%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.021	0.020	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1808885-006	RB114	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1727272)									
EM1809336-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1808885-006	RB114	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1727385)									
EM1808885-006	RB114	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809410-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1730275)									
EM1809113-150	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1809323-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.106	0.118	11.0	0% - 20%
EK040P: Fluoride by PC Titrator (QC Lot: 1725828)									
EM1808885-007	FB114	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1809320-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.3	1.3	0.00	0% - 50%



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1808885-006	RB114	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1808885-006	RB114	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1808885-006	RB114	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit

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 Work Order : EM1808885
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074G: Trihalomethanes (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1808885-006	RB114	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1723555)									
EM1809318-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1808885-006	RB114	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1723555)									
EM1809318-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1808885-006	RB114	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1723555)									
EM1809318-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1808885-006	RB114	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1727147)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	102	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	94.4	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	97.0	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	96.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	89.7	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	101	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	94.6	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	81.3	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	90.0	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	102	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1727146)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.6	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1727889)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	78.3	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1726920)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	91.2	80	110
EK040T: Fluoride Total (QCLot: 1727706)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	84.2	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1723395)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	103	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1723391)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	79.8	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	87.0	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	83.6	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	79.4	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	90.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	87.7	74	114
EP074H: Naphthalene (QCLot: 1723391)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	83.4	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1723391)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	72.3	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	71.7	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1723391) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	87.5	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	74.6	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	81.0	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	82.4	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	78.4	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	69.1	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	90.6	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	79.1	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	93.8	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	78.5	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	106	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	97.1	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	71.6	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.6	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	76.1	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	85.0	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	71.6	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1723392)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	107	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	93.8	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	98.2	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	89.3	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	100	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	88.4	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	102	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	107	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	87.8	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1723392)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	87.4	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	103	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	102	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	89.4	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	102	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	109	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	83.0	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	78.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	87.9	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	104	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1723392)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	99.8	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	105	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	104	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	104	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	107	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	1.4 mg/kg	102	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	109	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	110	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	115	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	119	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	116	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	106	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	122	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	123	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	121	55	137
EP075I: Organochlorine Pesticides (QCLot: 1723392)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	104	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	104	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	105	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	105	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	107	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	104	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	105	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	109	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	111	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	110	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	109	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	114	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	112	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	165	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	66.3	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	115	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	116	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	118	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	112	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	114	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1723391)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	73.3	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1727271)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	105	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1727273)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.8	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.8	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	88.4	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.1	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	92.1	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	91.4	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	91.0	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	92.8	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.2	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1727272)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	90.5	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1727385)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	108	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1730275)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	92.2	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1725828)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	112	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1724162)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	90.3	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1723557)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1723557) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	93.3	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1723557)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	72.6	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	82.1	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	106	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	85.4	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	96.7	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	86.2	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	80.8	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	95.6	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	90.5	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	99.2	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	84.8	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	91.3	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	99.5	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	93.4	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1723557)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	94.8	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	96.2	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	96.5	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	92.2	62	119
EP074G: Trihalomethanes (QCLot: 1723557)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	96.5	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1724163)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	86.1	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	86.3	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	90.0	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	90.4	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	92.7	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	110	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.2	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	93.2	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	95.4	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	96.3	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	96.3	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	98.8	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	97.6	56	126

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

CAS Number

LOR

Unit

Result

Concentration

LCS

Low

High

EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	96.1	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	95.9	53	125
EP075(SIM): Benzo(a,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	97.2	53	125

EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	74.9	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	74.1	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	82.2	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	70.5	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	84.0	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	75.4	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	87.2	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	89.4	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	81.8	22	122

EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	33.6	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	66.4	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	59.6	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	77.7	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	87.2	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	84.2	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	24.7	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	68.9	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	82.8	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	107	32	135

EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	90.4	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	96.5	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	91.3	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	94.6	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	93.7	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	97.3	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	95.3	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	92.9	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	95.5	57	128

EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	88.5	68	125
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EP080/071: Total Petroleum Hydrocarbons (QCLot: 1724164)



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1724164) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	73.7	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	76.6	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	74.8	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1723555)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	85.2	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1724164)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	74.3	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	74.8	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	76.3	58	137
EP080: BTEXN (QCLot: 1723555)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	96.7	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.0	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	98.2	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	96.0	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	98.0	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	90.6	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1727147)							
EM1808885-003	NEL-BH155_1.0m	EG005T: Arsenic	7440-38-2	50 mg/kg	90.4	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	90.5	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	88.8	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	82.4	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	86.8	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	82.2	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	80.8	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	92.8	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1727146)							
EM1808885-003	NEL-BH155_1.0m	EG035T: Mercury	7439-97-6	5 mg/kg	97.4	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1727889)							
EM1808885-003	NEL-BH155_1.0m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	62.2	58	114



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1726920)							
EM1808885-003	NEL-BH155_1.0m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	83.1	77	113
EK040T: Fluoride Total (QCLot: 1727706)							
EM1808885-003	NEL-BH155_1.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	120	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1723395)							
EM1808885-003	NEL-BH155_1.0m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	102	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1723391)							
EM1808885-003	NEL-BH155_1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	72.4	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	74.9	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1723391)							
EM1808885-003	NEL-BH155_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	62.3	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	68.8	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	76.6	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1723392)							
EM1808885-001	NEL-BH155_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	95.9	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	88.7	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	82.2	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1723392)							
EM1808885-001	NEL-BH155_0.2m	EP075-EM: Phenol	108-95-2	1 mg/kg	87.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	70.6	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1723392)							
EM1808885-001	NEL-BH155_0.2m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	100	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	108	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1723391)							
EM1808885-003	NEL-BH155_1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	51.0	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1723394)							
EM1808885-003	NEL-BH155_1.0m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	91.4	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	101	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	92.2	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1723391)							
EM1808885-003	NEL-BH155_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	49.0	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1723394)							
EM1808885-003	NEL-BH155_1.0m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	90.8	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	96.9	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	91.2	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1727273)							
EM1808885-006	RB114	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	92.3	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	90.2	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	77.7	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.2	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	86.1	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	87.2	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1727272)							
EM1808885-007	FB114	EG035F: Mercury	7439-97-6	0.01 mg/L	92.8	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1727385)							
EM1808885-007	FB114	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	107	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1730275)							
EM1808885-007	FB114	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	90.2	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1725828)							
EM1809231-006	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	115	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1723557)							
EM1808885-007	FB114	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	68.0	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	66.6	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1723557)							
EM1808885-007	FB114	EP074: Chlorobenzene	108-90-7	20 µg/L	75.4	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1723555)							
EM1808885-007	FB114	EP080: C6 - C9 Fraction	----	280 µg/L	61.2	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1723555)							
EM1808885-007	FB114	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	60.2	44	122
EP080: BTEXN (QCLot: 1723555)							
EM1808885-007	FB114	EP080: Benzene	71-43-2	20 µg/L	75.9	68	130
		EP080: Toluene	108-88-3	20 µg/L	77.6	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1808885	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 31-May-2018
Site	: North East Link - Contamination	Issue Date	: 20-Jun-2018
Sampler	: ----	No. of samples received	: 7
Order number	:	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

Matrix: SOIL

Matrix: WATER

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural	FB114	----	----	----	14-Jun-2018	31-May-2018	14
EK026SF: Total CN by Segmented Flow Analyser							
Opaque plastic bottle - NaOH	FB114	----	----	----	17-Jun-2018	14-Jun-2018	3
Opaque plastic bottle - NaOH	RB114	----	----	----	18-Jun-2018	14-Jun-2018	4
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved	FB114	14-Jun-2018	07-Jun-2018	7	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved	FB114	14-Jun-2018	07-Jun-2018	7	----	----	----
EP075A: Phenolic Compounds (Halogenated)							



Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis
EP075A: Phenolic Compounds (Halogenated) - Analysis Holding Time Compliance						
Amber Glass Bottle - Unpreserved	RB114, FB114	14-Jun-2018	07-Jun-2018	7	----	----
EP075A: Phenolic Compounds (Non-halogenated)						
Amber Glass Bottle - Unpreserved	RB114, FB114	14-Jun-2018	07-Jun-2018	7	----	----
EP075I: Organochlorine Pesticides						
Amber Glass Bottle - Unpreserved	RB114, FB114	14-Jun-2018	07-Jun-2018	7	----	----
EP080/071: Total Petroleum Hydrocarbons						
Amber Glass Bottle - Unpreserved	RB114, FB114	14-Jun-2018	07-Jun-2018	7	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Amber Glass Bottle - Unpreserved	RB114, FB114	14-Jun-2018	07-Jun-2018	7	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	13-Jun-2018	07-Jun-2018	✖	13-Jun-2018	13-Jun-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	----	----	----	14-Jun-2018	14-Jun-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	15-Jun-2018	27-Nov-2018	✓	15-Jun-2018	27-Nov-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	15-Jun-2018	28-Jun-2018	✓	19-Jun-2018	28-Jun-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	15-Jun-2018	28-Jun-2018	✓	15-Jun-2018	22-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	14-Jun-2018	14-Jun-2018	✓	15-Jun-2018	28-Jun-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	15-Jun-2018	28-Jun-2018	✓	18-Jun-2018	28-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	13-Jun-2018	14-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	13-Jun-2018	07-Jun-2018	✖	15-Jun-2018	07-Jun-2018	✖
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	13-Jun-2018	07-Jun-2018	✖	15-Jun-2018	07-Jun-2018	✖
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	13-Jun-2018	07-Jun-2018	✖	15-Jun-2018	07-Jun-2018	✖
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	13-Jun-2018	14-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH155_0.2m,	NEL-BH155_1.0m	31-May-2018	13-Jun-2018	14-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH155_0.2m, NEL-BH155_1.0m	31-May-2018	13-Jun-2018	14-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH155_0.2m, NEL-BH155_1.0m	31-May-2018	13-Jun-2018	14-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH155_0.2m	31-May-2018	13-Jun-2018	14-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH155_0.2m	31-May-2018	13-Jun-2018	07-Jun-2018	✗	15-Jun-2018	07-Jun-2018	✗
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH155_1.0m	31-May-2018	13-Jun-2018	14-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH155_1.0m	31-May-2018	13-Jun-2018	07-Jun-2018	✗	15-Jun-2018	07-Jun-2018	✗
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH155_0.2m	31-May-2018	13-Jun-2018	14-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH155_0.2m	31-May-2018	13-Jun-2018	07-Jun-2018	✗	15-Jun-2018	07-Jun-2018	✗
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH155_1.0m	31-May-2018	13-Jun-2018	14-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH155_1.0m	31-May-2018	13-Jun-2018	07-Jun-2018	✗	15-Jun-2018	07-Jun-2018	✗

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	FB114	31-May-2018	----	----	----	14-Jun-2018	31-May-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Natural (EG020B-F)	FB114	31-May-2018	----	----	----	15-Jun-2018	27-Nov-2018	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F)	FB114	31-May-2018	----	----	----	18-Jun-2018	28-Jun-2018	✔
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	FB114	31-May-2018	----	----	----	14-Jun-2018	28-Jun-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) FB114		31-May-2018	----	----	----	17-Jun-2018	14-Jun-2018	✘
Opaque plastic bottle - NaOH (EK026SF) RB114		31-May-2018	----	----	----	18-Jun-2018	14-Jun-2018	✘
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB114,	FB114	31-May-2018	----	----	----	14-Jun-2018	28-Jun-2018	✔
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB114,	FB114	31-May-2018	14-Jun-2018	07-Jun-2018	✘	14-Jun-2018	24-Jul-2018	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB114,	FB114	31-May-2018	13-Jun-2018	14-Jun-2018	✔	14-Jun-2018	14-Jun-2018	✔
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB114,	FB114	31-May-2018	13-Jun-2018	14-Jun-2018	✔	14-Jun-2018	14-Jun-2018	✔
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB114,	FB114	31-May-2018	13-Jun-2018	14-Jun-2018	✔	14-Jun-2018	14-Jun-2018	✔
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB114,	FB114	31-May-2018	13-Jun-2018	14-Jun-2018	✔	14-Jun-2018	14-Jun-2018	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB114,	FB114	31-May-2018	14-Jun-2018	07-Jun-2018	✘	14-Jun-2018	24-Jul-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB114,	FB114	31-May-2018	14-Jun-2018	07-Jun-2018	✘	14-Jun-2018	24-Jul-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB114,	FB114	31-May-2018	14-Jun-2018	07-Jun-2018	✘	14-Jun-2018	24-Jul-2018	✔
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB114,	FB114	31-May-2018	14-Jun-2018	07-Jun-2018	✘	14-Jun-2018	24-Jul-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB114,	FB114	31-May-2018	14-Jun-2018	07-Jun-2018	✘	14-Jun-2018	24-Jul-2018	✔
Amber VOC Vial - Sulfuric Acid (EP080) TB114, FB114	RB114,	31-May-2018	13-Jun-2018	14-Jun-2018	✔	14-Jun-2018	14-Jun-2018	✔

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 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)		31-May-2018	14-Jun-2018	07-Jun-2018	✖	14-Jun-2018	24-Jul-2018	✔
RB114,	FB114							
Amber VOC Vial - Sulfuric Acid (EP080)		31-May-2018	13-Jun-2018	14-Jun-2018	✔	14-Jun-2018	14-Jun-2018	✔
TB114,	RB114, FB114							
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)		31-May-2018	13-Jun-2018	14-Jun-2018	✔	14-Jun-2018	14-Jun-2018	✔
TB114,	RB114, FB114							



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **✖** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	6	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	6	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.

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Work Order : EM1808885
Client : GHD PTY LTD
Project : 31350060910



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1809010**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **KA**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **24**
No. of samples analysed : **15**

Page : 1 of 20
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 04-Jun-2018 07:50
Date Analysis Commenced : 04-Jun-2018
Issue Date : 08-Jun-2018 13:27



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EG035F: EM1808924 #1 Poor matrix spike recovery for dissolved mercury due to sample matrix. Confirmed by re-extraction and re-analysis.
- Samples were filtered through a 0.45um filter prior to the dissolved metals analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH009_1.5-1.6	NEL-ENV-BH009_2.45-2.9	NEL-ENV-BH009_3.8-4.0	NEL-ENV-BH009_4.8-5.0	QC3001
Client sampling date / time				01-Jun-2018 14:25	02-Jun-2018 08:30	02-Jun-2018 09:00	02-Jun-2018 09:30	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809010-003	EM1809010-005	EM1809010-006	EM1809010-007	EM1809010-009
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl ₂)	----	0.1	pH Unit	6.7	6.5	6.7	6.9	6.7
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	16.1	18.5	15.6	16.1	15.3
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	6	<5	6	9
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	13	15	7	11	16
Lead	7439-92-1	5	mg/kg	24	12	6	10	11
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	22	29	16	16	23
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	39	36	33	40	51
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	<1	<1	<1	<1
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	280	360	320	320	310
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH009_1.5-1. 6	NEL-ENV-BH009_2.45- 2.9	NEL-ENV-BH009_3.8-4. 0	NEL-ENV-BH009_4.8-5. 0	QC3001
Client sampling date / time					01-Jun-2018 14:25	02-Jun-2018 08:30	02-Jun-2018 09:00	02-Jun-2018 09:30	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809010-003	EM1809010-005	EM1809010-006	EM1809010-007	EM1809010-009
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH009_1.5-1.6	NEL-ENV-BH009_2.45-2.9	NEL-ENV-BH009_3.8-4.0	NEL-ENV-BH009_4.8-5.0	QC3001
Client sampling date / time				01-Jun-2018 14:25	02-Jun-2018 08:30	02-Jun-2018 09:00	02-Jun-2018 09:30	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809010-003	EM1809010-005	EM1809010-006	EM1809010-007	EM1809010-009
				Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued								
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH009_1.5-1. 6	NEL-ENV-BH009_2.45- 2.9	NEL-ENV-BH009_3.8-4. 0	NEL-ENV-BH009_4.8-5. 0	QC3001
Client sampling date / time				01-Jun-2018 14:25	02-Jun-2018 08:30	02-Jun-2018 09:00	02-Jun-2018 09:30	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809010-003	EM1809010-005	EM1809010-006	EM1809010-007	EM1809010-009
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH009_1.5-1.6	NEL-ENV-BH009_2.45-2.9	NEL-ENV-BH009_3.8-4.0	NEL-ENV-BH009_4.8-5.0	QC3001
Client sampling date / time				01-Jun-2018 14:25	02-Jun-2018 08:30	02-Jun-2018 09:00	02-Jun-2018 09:30	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809010-003	EM1809010-005	EM1809010-006	EM1809010-007	EM1809010-009
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	112	97.9	110	84.4	114
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	84.3	84.4	90.4	83.4	83.8
Toluene-D8	2037-26-5	0.1	%	90.5	87.0	92.2	84.8	82.4
4-Bromofluorobenzene	460-00-4	0.1	%	92.7	90.1	96.2	91.3	86.0
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.025	%	84.7	69.3	83.7	75.4	73.9
2-Chlorophenol-D4	93951-73-6	0.025	%	69.5	55.7	67.7	58.3	55.5
2,4,6-Tribromophenol	118-79-6	0.025	%	82.9	74.7	86.2	71.3	76.7
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.025	%	80.8	61.7	74.7	63.0	59.2
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	73.0	55.3	66.6	54.9	44.7
2-Fluorobiphenyl	321-60-8	0.025	%	92.4	73.6	88.6	79.6	74.6
Anthracene-d10	1719-06-8	0.025	%	95.2	88.6	103	87.6	97.1
4-Terphenyl-d14	1718-51-0	0.025	%	110	102	117	99.7	112



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH017_0.5-0. 6	NEL-ENV-BH032_1.0-1. 1	NEL-ENV-BH032_2.0-2. 1	NEL-ENV-BH032_4.0-4. 1	----
Client sampling date / time					01-Jun-2018 13:10	01-Jun-2018 09:45	01-Jun-2018 10:20	01-Jun-2018 10:40	----
Compound	CAS Number	LOR	Unit		EM1809010-011	EM1809010-013	EM1809010-015	EM1809010-016	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl ₂)	----	0.1	pH Unit		7.7	7.9	7.8	7.9	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		3.5	15.1	14.4	13.9	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	5	<5	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		13	11	14	9	----
Lead	7439-92-1	5	mg/kg		14	19	16	10	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		25	22	11	8	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		35	18	13	12	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		130	400	290	290	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
[^] Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH017_0.5-0. 6	NEL-ENV-BH032_1.0-1. 1	NEL-ENV-BH032_2.0-2. 1	NEL-ENV-BH032_4.0-4. 1	----
Client sampling date / time					01-Jun-2018 13:10	01-Jun-2018 09:45	01-Jun-2018 10:20	01-Jun-2018 10:40	----
Compound	CAS Number	LOR	Unit		EM1809010-011	EM1809010-013	EM1809010-015	EM1809010-016	-----
					Result	Result	Result	Result	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH017_0.5-0. 6	NEL-ENV-BH032_1.0-1. 1	NEL-ENV-BH032_2.0-2. 1	NEL-ENV-BH032_4.0-4. 1	----
Client sampling date / time					01-Jun-2018 13:10	01-Jun-2018 09:45	01-Jun-2018 10:20	01-Jun-2018 10:40	----
Compound	CAS Number	LOR	Unit		EM1809010-011	EM1809010-013	EM1809010-015	EM1809010-016	-----
					Result	Result	Result	Result	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	<1	<1	----
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	<1	<1	----
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	<5	<5	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	<5	<5	----
Dinoseb	88-85-7	5	mg/kg		<5	<5	<5	<5	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	<1	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH017_0.5-0.6	NEL-ENV-BH032_1.0-1.1	NEL-ENV-BH032_2.0-2.1	NEL-ENV-BH032_4.0-4.1	----
Client sampling date / time				01-Jun-2018 13:10	01-Jun-2018 09:45	01-Jun-2018 10:20	01-Jun-2018 10:40	----
Compound	CAS Number	LOR	Unit	EM1809010-011	EM1809010-013	EM1809010-015	EM1809010-016	-----
				Result	Result	Result	Result	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH017_0.5-0. 6	NEL-ENV-BH032_1.0-1. 1	NEL-ENV-BH032_2.0-2. 1	NEL-ENV-BH032_4.0-4. 1	----
Client sampling date / time					01-Jun-2018 13:10	01-Jun-2018 09:45	01-Jun-2018 10:20	01-Jun-2018 10:40	----
Compound	CAS Number	LOR	Unit		EM1809010-011	EM1809010-013	EM1809010-015	EM1809010-016	-----
					Result	Result	Result	Result	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		94.0	111	109	126	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		89.3	86.2	84.8	81.8	----
Toluene-D8	2037-26-5	0.1	%		92.9	87.5	86.0	84.3	----
4-Bromofluorobenzene	460-00-4	0.1	%		96.1	90.2	88.3	86.3	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		78.4	107	109	105	----
2-Chlorophenol-D4	93951-73-6	0.025	%		65.0	79.5	76.8	74.6	----
2,4,6-Tribromophenol	118-79-6	0.025	%		79.2	86.9	87.9	84.7	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		71.3	107	99.9	98.4	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		70.8	94.4	86.6	89.0	----
2-Fluorobiphenyl	321-60-8	0.025	%		84.5	104	103	98.8	----
Anthracene-d10	1719-06-8	0.025	%		87.7	103	103	98.8	----
4-Terphenyl-d14	1718-51-0	0.025	%		104	112	112	109	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB303	FB303	TB303	RB304	FB304
Client sampling date / time				01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809010-019	EM1809010-020	EM1809010-021	EM1809010-022	EM1809010-023
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.57	8.36	----	6.12	6.35
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	<0.0001	<0.0001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	<0.01	<0.01
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	<0.005	<0.005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	<0.0001	<0.0001
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	<0.01	<0.01
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	<0.004	<0.004
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	<1	<1
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	<5	<5
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB303	FB303	TB303	RB304	FB304
Client sampling date / time				01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809010-019	EM1809010-020	EM1809010-021	EM1809010-022	EM1809010-023
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	----	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	----	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	----	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	----	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	----	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	----	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	----	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	----	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	----	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	----	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Indeno(1,2,3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	<2	<2	----	<2	<2
2,4-Dichlorophenol	120-83-2	2	µg/L	<2	<2	----	<2	<2



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB303	FB303	TB303	RB304	FB304
Client sampling date / time				01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809010-019	EM1809010-020	EM1809010-021	EM1809010-022	EM1809010-023
				Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	<2	<2
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	<4	<4
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	<2	<2
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	<2	<2
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	<2	<2
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	<2	<2
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	<2	<2
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	<4	<4
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	<4	<4
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	<4	<4
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	<4	<4
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	<4	<4
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	<100	<100
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	<50	<50
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	<50	<50
Dinoseb	88-85-7	50	µg/L	<50	<50	----	<50	<50
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	<50	<50
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	<50	<50



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB303	FB303	TB303	RB304	FB304
Client sampling date / time				01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809010-019	EM1809010-020	EM1809010-021	EM1809010-022	EM1809010-023
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	91.7	94.7	----	84.4	86.2
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	90.2	90.2	----	91.9	92.2
Toluene-D8	2037-26-5	5	%	92.0	91.0	----	91.8	91.7
4-Bromofluorobenzene	460-00-4	5	%	104	105	----	105	104
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	30.9	29.3	----	30.6	27.6
2-Chlorophenol-D4	93951-73-6	1.0	%	81.4	77.9	----	79.3	72.6
2,4,6-Tribromophenol	118-79-6	1.0	%	65.8	67.9	----	62.5	59.0
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	90.2	90.3	----	92.9	87.1
Anthracene-d10	1719-06-8	1.0	%	98.2	100	----	101	98.7
4-Terphenyl-d14	1718-51-0	1.0	%	110	116	----	105	106



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB303	FB303	TB303	RB304	FB304
Client sampling date / time					01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	02-Jun-2018 00:00	02-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809010-019	EM1809010-020	EM1809010-021	EM1809010-022	EM1809010-023
					Result	Result	Result	Result	Result
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		22.6	24.9	----	24.4	23.0
2-Chlorophenol-D4	93951-73-6	0.25	%		59.7	67.5	----	64.4	63.4
2,4,6-Tribromophenol	118-79-6	0.25	%		73.2	83.6	----	78.0	76.0
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		69.9	79.8	----	73.4	75.2
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		82.1	93.8	----	89.0	88.2
2-Fluorobiphenyl	321-60-8	0.25	%		77.7	88.9	----	83.1	86.8
Anthracene-d10	1719-06-8	0.25	%		75.0	85.1	----	80.1	82.0
4-Terphenyl-d14	1718-51-0	0.25	%		92.7	105	----	99.9	102
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		89.1	89.4	93.0	91.0	91.0
Toluene-D8	2037-26-5	2	%		82.1	81.2	83.3	81.7	81.8
4-Bromofluorobenzene	460-00-4	2	%		88.7	87.9	87.1	86.6	87.4



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB304	----	----	----	----
Client sampling date / time					02-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809010-024	-----	-----	-----	-----
				Result	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		91.2	----	----	----	----
Toluene-D8	2037-26-5	2	%		83.6	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		87.9	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Page 1 of 2

Job Number 31350060910		GHD Office Melbourne		Laboratory: ALS Springvale		PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format																																																																																																																																																																																																																			
Project North East Link - Contamination Assessment		Contact Email kory.auch@ghd.com		Address: 2 - 4 Westall Rd, Springvale																																																																																																																																																																																																																					
GHD Contact Kory Auch		Quote No./GHD Reference MEL/124/18		Lab Contact: Shirley LeCornu																																																																																																																																																																																																																					
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<table border="1"> <thead> <tr> <th>Sample ID</th> <th>Date</th> <th>Time</th> <th>Composite Sample</th> <th>Sample Type</th> <th>Preservative</th> <th>Volume (mL)</th> <th>Hold</th> <th>IWRG621 (P.16)</th> <th>Volatile TPH/BTEX (P.18)</th> </tr> </thead> <tbody> <tr> <td>1 NEL-ENV-BH009_0.5-0.6</td> <td>01-Jun-2018</td> <td>14:00</td> <td></td> <td>S</td> <td>No</td> <td>250</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>2 - - - 1.0-1.1</td> <td></td> <td>14:15</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>3 - - - 1.5-1.6</td> <td></td> <td>14:25</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>4 - - - 2.0-2.45</td> <td>02-Jun-2018</td> <td>08:00</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>5 - - - 2.45-2.9</td> <td></td> <td>08:30</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>6 - - - 3.8-4.0</td> <td></td> <td>09:00</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>7 - - - 4.8-5.0</td> <td></td> <td>09:30</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>8 NEL-ENV-BH009_5.6-6.0</td> <td></td> <td>10:00</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>9 QC3001</td> <td></td> <td>00:00</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>10 QC4001</td> <td></td> <td>00:00</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>11 NEL-ENV-BH017_0.0-0.1</td> <td>01-Jun-2018</td> <td>13:00</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>12 - - - BH017_0.5-0.6</td> <td>01-Jun-2018</td> <td>13:10</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>13 - - - BH032_0.5-0.6</td> <td>01-Jun-2018</td> <td>09:30</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>14 - - - 1.0-1.1</td> <td></td> <td>09:45</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>15 - - - 1.5-1.6</td> <td></td> <td>10:00</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>16 - - - 2.0-2.1</td> <td></td> <td>10:20</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>17 - - - 4.0-4.1</td> <td></td> <td>10:40</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>18 - - - 5.0-5.1</td> <td></td> <td>10:50</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>19 NEL-ENV-BH032_6.0-6.1</td> <td>01-Jun-2018</td> <td>11:00</td> <td></td> <td>S</td> <td>No</td> <td>250</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>20 RB303</td> <td>01-Jun-2018</td> <td>00:00</td> <td></td> <td>W</td> <td>Yes</td> <td>V, G, P 2, 2, 4</td> <td></td> <td>X</td> <td></td> </tr> </tbody> </table>				Sample ID	Date	Time	Composite Sample	Sample Type	Preservative	Volume (mL)	Hold	IWRG621 (P.16)	Volatile TPH/BTEX (P.18)	1 NEL-ENV-BH009_0.5-0.6	01-Jun-2018	14:00		S	No	250	X			2 - - - 1.0-1.1		14:15					X			3 - - - 1.5-1.6		14:25					X			4 - - - 2.0-2.45	02-Jun-2018	08:00					X			5 - - - 2.45-2.9		08:30					X			6 - - - 3.8-4.0		09:00					X			7 - - - 4.8-5.0		09:30					X			8 NEL-ENV-BH009_5.6-6.0		10:00					X			9 QC3001		00:00					X			10 QC4001		00:00					X			11 NEL-ENV-BH017_0.0-0.1	01-Jun-2018	13:00					X			12 - - - BH017_0.5-0.6	01-Jun-2018	13:10					X			13 - - - BH032_0.5-0.6	01-Jun-2018	09:30					X			14 - - - 1.0-1.1		09:45					X			15 - - - 1.5-1.6		10:00					X			16 - - - 2.0-2.1		10:20					X			17 - - - 4.0-4.1		10:40					X			18 - - - 5.0-5.1		10:50					X			19 NEL-ENV-BH032_6.0-6.1	01-Jun-2018	11:00		S	No	250	X			20 RB303	01-Jun-2018	00:00		W	Yes	V, G, P 2, 2, 4		X		Environmental Division Melbourne Work Order Reference EM1809010 Telephone : - 61-3-8640 9600			
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Remarks: please send to Eurofins (R-1) for same analysis																																																																																																																																																																																																																									

Sampled by:	Kory Auch / Kel	Date/Time:	2018-June-03 / 13:30	Relinquished by:		Date/Time:	
Received by:		Date/Time:		Relinquished by:		Date/Time:	
Received by Courier:	Amitha	Date/Time:	4/6 7:50	Relinquished by:		Date/Time:	
Received by Lab:		Date/Time:		Relinquished by:		Date/Time:	
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Sampled by:	Kory Auer / Ryan	Date/Time:	2018-JUNE-03 / 13:30	Relinquished by:		Date/Time:	
Received by:		Date/Time:		Relinquished by:		Date/Time:	
Received by Courier:	Anitha	Date/Time:	4/6 7:50	Relinquished by:		Date/Time:	
Received by Lab:		Date/Time:					
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1809010**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 4
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: KA		

Dates

Date Samples Received	: 04-Jun-2018 07:50	Issue Date	: 04-Jun-2018
Client Requested Due Date	: 12-Jun-2018	Scheduled Reporting Date	: 12-Jun-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 6.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 24 / 15

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples to be filtered through a 0.45um filter prior to the dissolved metals analysis.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB303	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB303	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
RB304	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB304	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB303	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB303	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
RB304	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB304	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB303	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB303	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
RB304	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB304	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM1809010-003 : 01-Jun-2018 14:25 : NEL-ENV-BH009_1.5-1.6
EM1809010-005 : 02-Jun-2018 08:30 : NEL-ENV-BH009_2.45-2.9
EM1809010-006 : 02-Jun-2018 09:00 : NEL-ENV-BH009_3.8-4.0
EM1809010-007 : 02-Jun-2018 09:30 : NEL-ENV-BH009_4.8-5.0
EM1809010-011 : 01-Jun-2018 13:10 : NEL-ENV-BH017_0.5-0.6
EM1809010-013 : 01-Jun-2018 09:45 : NEL-ENV-BH032_1.0-1.1
EM1809010-015 : 01-Jun-2018 10:20 : NEL-ENV-BH032_2.0-2.1
EM1809010-016 : 01-Jun-2018 10:40 : NEL-ENV-BH032_4.0-4.1

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1809010-001	01-Jun-2018 14:00	NEL-ENV-BH009_0.5-0.6	✓		
EM1809010-002	01-Jun-2018 14:15	NEL-ENV-BH009_1.0-1.1	✓		
EM1809010-003	01-Jun-2018 14:25	NEL-ENV-BH009_1.5-1.6		✓	✓
EM1809010-004	02-Jun-2018 08:00	NEL-ENV-BH009_2.0-2....	✓		
EM1809010-005	02-Jun-2018 08:30	NEL-ENV-BH009_2.45-2...		✓	✓
EM1809010-006	02-Jun-2018 09:00	NEL-ENV-BH009_3.8-4.0		✓	✓
EM1809010-007	02-Jun-2018 09:30	NEL-ENV-BH009_4.8-5.0		✓	✓
EM1809010-008	02-Jun-2018 10:00	NEL-ENV-BH009_5.6-6.0	✓		
EM1809010-009	02-Jun-2018 00:00	QC3001		✓	✓
EM1809010-010	01-Jun-2018 13:00	NEL-ENV-BH017_0.0-0.1	✓		
EM1809010-011	01-Jun-2018 13:10	NEL-ENV-BH017_0.5-0.6		✓	✓
EM1809010-012	01-Jun-2018 09:30	NEL-ENV-BH032_0.5-0.6	✓		
EM1809010-013	01-Jun-2018 09:45	NEL-ENV-BH032_1.0-1.1		✓	✓
EM1809010-014	01-Jun-2018 10:00	NEL-ENV-BH032_1.5-1.6	✓		
EM1809010-015	01-Jun-2018 10:20	NEL-ENV-BH032_2.0-2.1		✓	✓



			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1809010-016	01-Jun-2018 10:40	NEL-ENV-BH032_4.0-4.1		✓	✓
EM1809010-017	01-Jun-2018 10:50	NEL-ENV-BH032_5.0-5.1	✓		
EM1809010-018	01-Jun-2018 11:00	NEL-ENV-BH032_6.0-6.1	✓		

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1809010-019	01-Jun-2018 00:00	RB303	✓	
EM1809010-020	01-Jun-2018 00:00	FB303	✓	
EM1809010-021	01-Jun-2018 00:00	TB303		✓
EM1809010-022	02-Jun-2018 00:00	RB304	✓	
EM1809010-023	02-Jun-2018 00:00	FB304	✓	
EM1809010-024	02-Jun-2018 00:00	TB304		✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
Client Sample ID(s)							
EA005-P: pH by PC Titrator							
FB303	Clear Plastic Bottle - Natural	----	01-Jun-2018	04-Jun-2018	✗	----	----
FB304	Clear Plastic Bottle - Natural	----	02-Jun-2018	04-Jun-2018	✗	----	----
RB303	Clear Plastic Bottle - Natural	----	01-Jun-2018	04-Jun-2018	✗	----	----
RB304	Clear Plastic Bottle - Natural	----	02-Jun-2018	04-Jun-2018	✗	----	----

QUALITY CONTROL REPORT

Work Order	: EM1809010	Page	: 1 of 20
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 04-Jun-2018
Order number	: ----	Date Analysis Commenced	: 04-Jun-2018
C-O-C number	: ----	Issue Date	: 08-Jun-2018
Sampler	: KA		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 24		
No. of samples analysed	: 15		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1704058)									
EM1808988-021	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.9	7.9	0.00	0% - 20%
EM1809010-007	NEL-ENV-BH009_4.8-5.0	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.9	7.0	1.44	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1698481)									
EM1809007-012	Anonymous	EA055: Moisture Content	----	0.1	%	12.0	11.2	7.63	0% - 20%
EM1809010-005	NEL-ENV-BH009_2.45-2.9	EA055: Moisture Content	----	0.1	%	18.5	16.6	11.0	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1701021)									
EM1809003-015	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	48	53	9.18	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	14	44.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	44	45	3.61	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	291	261	11.0	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	7	7	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	125	138	9.92	0% - 20%
EM1809003-063	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	45	41	8.49	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	7	18.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	94	94	0.00	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	108	96	12.1	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1701021) - continued									
EM1809003-063	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	9	12	26.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	145	139	3.98	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1701022)									
EM1809003-015	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.0	0.9	0.00	No Limit
EM1809003-063	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1701309)									
EM1808999-015	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808999-029	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1701310)									
EM1809010-005	NEL-ENV-BH009_2.45-2.9	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1705136)									
EM1809007-005	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809010-006	NEL-ENV-BH009_3.8-4.0	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1698689)									
EM1808783-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	470	470	0.00	0% - 50%
EM1809010-003	NEL-ENV-BH009_1.5-1.6	EK040T: Fluoride	16984-48-8	40	mg/kg	280	320	12.9	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1700757)									
EM1808783-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1808993-008	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1698063)									
EM1808824-021	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809010-009	QC3001	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1698063)									
EM1808824-021	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1809010-009	QC3001	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1698063)									
EM1808824-021	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP074I: Volatile Halogenated Compounds (QC Lot: 1698063) - continued											
EM1808824-021	Anonymous	EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit		
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit		
EM1809010-009	QC3001	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit		
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit		
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1700755)									
		EM1808783-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
				EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1700755) - continued									
EM1808783-001	Anonymous	EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		0-2							
EM1808993-008	Anonymous	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1808783-001	Anonymous	0-2							
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1700755)							
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
EM1808993-008	Anonymous	EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
EM1808993-008	Anonymous	EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1700755)							



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1700755) - continued									
EM1808783-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1808993-008	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1700755)									
EM1808783-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1700755) - continued									
EM1808783-001	Anonymous	EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1808993-008	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1698063)									
EM1808824-021	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1809010-009	QC3001	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1700756)									
EM1808783-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1700756) - continued									
EM1808993-008	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1698063)									
EM1808824-021	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1809010-009	QC3001	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1700756)									
EM1808783-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1808993-008	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1700658)									
EM1809038-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.04	7.15	1.55	0% - 20%
EM1809026-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	10.7	10.7	0.374	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1703889)									
EM1808911-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.004	0.003	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.008	0.008	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809010-019	RB303	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1703892)									
EM1809010-019	RB303	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1703890)									
EM1808913-012	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1809010-019	RB303	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1702416)									
EM1808602-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1808602-010	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1701053)									
EP1806643-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1700657)									
EM1809005-003	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	0.00	No Limit
EM1809026-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1700332)									
EM1809046-002	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1700332)									
EM1809046-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1700332)									
EM1809046-002	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1700332)									
EM1809046-002	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1700331)									
EM1809046-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit

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 Work Order : EM1809010
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1700331) - continued									
EM1809046-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1700331)									
EM1809046-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1809046-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1700331)									
EM1809046-004	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1809046-002	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)		
		LCS	Low	High	
Result					
<5	21.7 mg/kg	95.7	79	113	
<1	4.64 mg/kg	89.0	85	109	
<5	32 mg/kg	93.5	78	108	
<5	40 mg/kg	92.0	78	106	
<2	7.9 mg/kg	87.9	86	112	
<2	55 mg/kg	102	82	111	
<5	5.37 mg/kg	101	93	109	
<2	2.1 mg/kg	84.0	80	108	
<5	5.2 mg/kg	95.8	88	116	
<5	60.8 mg/kg	98.9	82	111	
<0.1	2.57 mg/kg	86.3	77	104	
<0.5	40 mg/kg	76.1	75	112	
<0.5	40 mg/kg	91.2	75	112	
<1	20 mg/kg	93.5	80	110	
<40	400 mg/kg	100	77	106	
<0.1	1 mg/kg	95.0	63	118	
<0.2	2.1 mg/kg	82.1	74	118	
<0.5	2.1 mg/kg	81.3	70	124	
<0.5	2.1 mg/kg	84.2	71	122	
<0.5	4.2 mg/kg	79.7	70	118	
<0.5	2.1 mg/kg	83.1	76	116	
<0.5	2.1 mg/kg	81.3	74	114	
<1	0.6 mg/kg	85.8	77	111	



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1698063) - continued								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	75.0	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	76.0	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	94.5	68	107
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	82.3	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	81.2	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	80.3	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	84.0	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	82.3	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	89.4	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	83.1	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	89.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	66.8	64	124
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	93.7	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.2	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	69.2	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	83.6	73	117
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	81.8	69	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	83.3	75	114
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	81.3	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1700755)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	96.7	54	122
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	80.0	58	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	95.8	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	86.1	62	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	95.2	53	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	85.0	60	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	90.4	56	118
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5	0.05	mg/kg	<0.05	4 mg/kg	92.1	54	125
	8-90-2							
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	76.7	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1700755)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	76.4	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	92.6	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	84.5	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	76.8	53	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	90.6	43	120
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	95.1	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	78.1	59	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	72.3	47	125



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1700755) - continued								
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	82.4	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	90.3	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1700755)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	99.5	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	99.8	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	103	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	99.2	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	101	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	66.8	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	100	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	101	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	100	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	103	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	102	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	97.2	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	101	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	101	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	100	55	137
EP075I: Organochlorine Pesticides (QCLot: 1700755)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	97.4	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	97.9	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	98.6	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	97.8	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	96.9	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	95.1	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	98.7	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	99.2	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	99.7	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	99.2	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	99.6	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	99.9	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	100	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	93.1	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	91.1	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	101	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	101	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	101	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	94.4	59	134

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1703889)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.2	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.3	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.7	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	97.0	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.5	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	100	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	103	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.0	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1703892)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	106	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1703890)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	105	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1702416)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	100	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1701053)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	91.1	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1700657)								



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EK040P: Fluoride by PC Titrator (QCLot: 1700657) - continued								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	108	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1698039)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	79.1	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1700332)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	100	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1700332)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	97.6	64	139
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	98.0	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	107	81	144
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	98.5	73	121
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	99.6	78	120
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	98.2	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	95.6	66	119
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	102	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	90.3	70	120
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	103	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	101	75	119
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	99.9	75	112
EP074: 1.1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	105	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	105	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1700332)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	102	82	114
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	98.1	76	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	99.4	82	112
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	99.2	62	119
EP074G: Trihalomethanes (QCLot: 1700332)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	101	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1698040)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	84.8	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	85.1	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	87.9	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	88.4	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	86.8	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	102	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	89.2	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	87.6	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	87.9	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	88.0	55	123



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1698040) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	90.7	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	92.4	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	89.6	56	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	88.6	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	88.1	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	90.0	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1698038)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	64.9	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	60.8	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	84.1	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	74.1	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	85.0	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	76.1	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	60.0	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5	2	µg/L	<2	20 µg/L	68.9	47	125
	8-90-2							
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	46.8	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1698038)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	24.0	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	61.5	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	50.3	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	60.9	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	80.8	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	91.6	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	24.4	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	74.2	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	83.0	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	65.8	32	135
EP075I: Organochlorine Pesticides (QCLot: 1698038)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	77.6	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	77.4	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	69.8	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	69.4	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	66.3	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	76.3	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	68.2	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	74.2	62	136



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075I: Organochlorine Pesticides (QCLot: 1698038) - continued								
EP075-EM: 4.4`-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	82.7	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1698041)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	93.3	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	98.7	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	96.4	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1700331)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	88.5	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1698041)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	92.8	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	96.5	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	98.4	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1700331)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	90.4	66	123
EP080: BTEXN (QCLot: 1700331)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	88.5	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	95.0	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	90.0	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	91.6	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	94.0	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	94.5	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1701021)							
EM1809003-025	Anonymous	EG005T: Nickel	7440-02-0	50 mg/kg	81.0	78	120
EM1809003-025	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	107	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	106	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	120	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	104	79	117
		EG005T: Selenium	7782-49-2	50 mg/kg	101	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	128	74	128



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1701022)							
EM1809003-025	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	99.8	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1701309)							
EM1808999-017	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	87.4	58	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1701310)							
EM1809010-006	NEL-ENV-BH009_3.8-4.0	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	87.2	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1705136)							
EM1809007-007	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	82.0	77	113
EK040T: Fluoride Total (QCLot: 1698689)							
EM1808783-005	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	80.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1700757)							
EM1808988-021	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	85.5	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1698063)							
EM1808824-022	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	85.3	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	89.9	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1698063)							
EM1808824-022	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	74.2	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	83.2	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	91.5	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1700755)							
EM1808783-005	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	89.6	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	85.6	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	47.8	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1700755)							
EM1808783-005	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	82.4	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	73.9	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1700755)							
EM1808783-005	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	99.4	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	103	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1698063)							
EM1808824-022	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	74.6	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1700756)							
EM1808783-010	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	81.7	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	96.2	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	89.9	64	118

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 Work Order : EM1809010
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1698063)							
EM1808824-022	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	71.4	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1700756)							
EM1808783-010	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	85.3	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	94.8	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	74.8	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1703889)							
EM1808911-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	91.2	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	92.6	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	88.7	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.5	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	86.7	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	91.1	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1703890)							
EM1808924-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	# 55.2	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1702416)							
EM1808602-002	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	100	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1701053)							
EM1809010-020	FB303	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	89.8	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1700657)							
EM1809005-004	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	96.0	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1700332)							
EM1809010-019	RB303	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	69.6	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	71.2	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1700332)							
EM1809010-019	RB303	EP074: Chlorobenzene	108-90-7	20 µg/L	92.3	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1700331)							
EM1809010-019	RB303	EP080: C6 - C9 Fraction	----	280 µg/L	57.2	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1700331)							
EM1809010-019	RB303	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	58.0	44	122
EP080: BTEXN (QCLot: 1700331)							
EM1809010-019	RB303	EP080: Benzene	71-43-2	20 µg/L	76.2	68	130
		EP080: Toluene	108-88-3	20 µg/L	82.2	72	132

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Client : GHD PTY LTD
Project : 31350060910



QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1809010**

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Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Project : **31350060910**
Site : **----**
Sampler : **KA**
Order number :

Laboratory : Environmental Division Melbourne
Telephone : +61-3-8549 9630
Date Samples Received : 04-Jun-2018
Issue Date : 08-Jun-2018
No. of samples received : 24
No. of samples analysed : 15

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- Matrix Spike outliers exist - please see following pages for full details.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	EM1808924--001	Anonymous	Mercury	7439-97-6	55.2 %	70-120%	Recovery less than lower data quality objective

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP066S: PCB Surrogate	EM1809010-016	NEL-ENV-BH032_4.0-4.1	Decachlorobiphenyl	2051-24-3	126 %	41-122 %	Recovery greater than upper data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
RB303,	FB303	----	----	----	05-Jun-2018	01-Jun-2018	4
Clear Plastic Bottle - Natural							
RB304,	FB304	----	----	----	05-Jun-2018	02-Jun-2018	3

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	06-Jun-2018	08-Jun-2018	✔	06-Jun-2018	06-Jun-2018	✔
Soil Glass Jar - Unpreserved (EA001) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	06-Jun-2018	09-Jun-2018	✔	06-Jun-2018	06-Jun-2018	✔
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	----	----	----	04-Jun-2018	15-Jun-2018	✔
Soil Glass Jar - Unpreserved (EA055) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	----	----	----	04-Jun-2018	16-Jun-2018	✔
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	05-Jun-2018	28-Nov-2018	✔	05-Jun-2018	28-Nov-2018	✔
Soil Glass Jar - Unpreserved (EG005T) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	05-Jun-2018	29-Nov-2018	✔	05-Jun-2018	29-Nov-2018	✔
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	05-Jun-2018	29-Jun-2018	✔	06-Jun-2018	29-Jun-2018	✔
Soil Glass Jar - Unpreserved (EG035T) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	05-Jun-2018	30-Jun-2018	✔	06-Jun-2018	30-Jun-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	06-Jun-2018	29-Jun-2018	✔	06-Jun-2018	13-Jun-2018	✔
Soil Glass Jar - Unpreserved (EG048G) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	06-Jun-2018	30-Jun-2018	✔	06-Jun-2018	13-Jun-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	06-Jun-2018	15-Jun-2018	✔	07-Jun-2018	20-Jun-2018	✔
Soil Glass Jar - Unpreserved (EK026SF) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	06-Jun-2018	16-Jun-2018	✔	07-Jun-2018	20-Jun-2018	✔
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	05-Jun-2018	29-Jun-2018	✔	07-Jun-2018	29-Jun-2018	✔
Soil Glass Jar - Unpreserved (EK040T) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	05-Jun-2018	30-Jun-2018	✔	07-Jun-2018	30-Jun-2018	✔
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	05-Jun-2018	15-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP066-EM) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	05-Jun-2018	16-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	04-Jun-2018	08-Jun-2018	✔	05-Jun-2018	08-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	04-Jun-2018	09-Jun-2018	✔	05-Jun-2018	09-Jun-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	04-Jun-2018	08-Jun-2018	✔	05-Jun-2018	08-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	04-Jun-2018	09-Jun-2018	✔	05-Jun-2018	09-Jun-2018	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	04-Jun-2018	08-Jun-2018	✔	05-Jun-2018	08-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	04-Jun-2018	09-Jun-2018	✔	05-Jun-2018	09-Jun-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	05-Jun-2018	15-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	05-Jun-2018	16-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	05-Jun-2018	15-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	05-Jun-2018	16-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	05-Jun-2018	15-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	05-Jun-2018	16-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	05-Jun-2018	15-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	05-Jun-2018	16-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	04-Jun-2018	08-Jun-2018	✔	05-Jun-2018	08-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	05-Jun-2018	15-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	04-Jun-2018	09-Jun-2018	✔	05-Jun-2018	09-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	05-Jun-2018	16-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	04-Jun-2018	08-Jun-2018	✔	05-Jun-2018	08-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH009_1.5-1.6, NEL-ENV-BH032_1.0-1.1, NEL-ENV-BH032_4.0-4.1	NEL-ENV-BH017_0.5-0.6, NEL-ENV-BH032_2.0-2.1,	01-Jun-2018	05-Jun-2018	15-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	04-Jun-2018	09-Jun-2018	✔	05-Jun-2018	09-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH009_2.45-2.9, NEL-ENV-BH009_4.8-5.0,	NEL-ENV-BH009_3.8-4.0, QC3001	02-Jun-2018	05-Jun-2018	16-Jun-2018	✔	05-Jun-2018	15-Jul-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) RB303,	FB303	01-Jun-2018	----	----	----	05-Jun-2018	01-Jun-2018	✘
Clear Plastic Bottle - Natural (EA005-P) RB304,	FB304	02-Jun-2018	----	----	----	05-Jun-2018	02-Jun-2018	✘
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Natural (EG020B-F) RB303,	FB303	01-Jun-2018	----	----	----	06-Jun-2018	28-Nov-2018	✔
Clear Plastic Bottle - Natural (EG020B-F) RB304,	FB304	02-Jun-2018	----	----	----	06-Jun-2018	29-Nov-2018	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F) RB303,	FB303	01-Jun-2018	----	----	----	07-Jun-2018	29-Jun-2018	✔
Clear Plastic Bottle - Natural (EG035F) RB304,	FB304	02-Jun-2018	----	----	----	07-Jun-2018	30-Jun-2018	✔
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB303,	FB303	01-Jun-2018	----	----	----	05-Jun-2018	29-Jun-2018	✔
Clear Plastic Bottle - NaOH (EG050F) RB304,	FB304	02-Jun-2018	----	----	----	05-Jun-2018	30-Jun-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF) RB303,	FB303	01-Jun-2018	----	----	----	05-Jun-2018	15-Jun-2018	✔
White Plastic Bottle-NaOH (EK026SF) RB304,	FB304	02-Jun-2018	----	----	----	05-Jun-2018	16-Jun-2018	✔
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB303,	FB303	01-Jun-2018	----	----	----	05-Jun-2018	29-Jun-2018	✔
Clear Plastic Bottle - Natural (EK040P) RB304,	FB304	02-Jun-2018	----	----	----	05-Jun-2018	30-Jun-2018	✔
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB303,	FB303	01-Jun-2018	04-Jun-2018	08-Jun-2018	✔	05-Jun-2018	14-Jul-2018	✔
Amber Glass Bottle - Unpreserved (EP066) RB304,	FB304	02-Jun-2018	04-Jun-2018	09-Jun-2018	✔	05-Jun-2018	14-Jul-2018	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB303,	FB303	01-Jun-2018	05-Jun-2018	15-Jun-2018	✔	05-Jun-2018	15-Jun-2018	✔
Amber VOC Vial - Sulfuric Acid (EP074) RB304,	FB304	02-Jun-2018	05-Jun-2018	16-Jun-2018	✔	05-Jun-2018	16-Jun-2018	✔



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB303,	FB303	01-Jun-2018	05-Jun-2018	15-Jun-2018	✓	05-Jun-2018	15-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP074) RB304,	FB304	02-Jun-2018	05-Jun-2018	16-Jun-2018	✓	05-Jun-2018	16-Jun-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB303,	FB303	01-Jun-2018	05-Jun-2018	15-Jun-2018	✓	05-Jun-2018	15-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP074) RB304,	FB304	02-Jun-2018	05-Jun-2018	16-Jun-2018	✓	05-Jun-2018	16-Jun-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB303,	FB303	01-Jun-2018	05-Jun-2018	15-Jun-2018	✓	05-Jun-2018	15-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP074) RB304,	FB304	02-Jun-2018	05-Jun-2018	16-Jun-2018	✓	05-Jun-2018	16-Jun-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB303,	FB303	01-Jun-2018	04-Jun-2018	08-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB304,	FB304	02-Jun-2018	04-Jun-2018	09-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB303,	FB303	01-Jun-2018	04-Jun-2018	08-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓
Amber Glass Bottle - Unpreserved (EP075-EM) RB304,	FB304	02-Jun-2018	04-Jun-2018	09-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB303,	FB303	01-Jun-2018	04-Jun-2018	08-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓
Amber Glass Bottle - Unpreserved (EP075-EM) RB304,	FB304	02-Jun-2018	04-Jun-2018	09-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB303,	FB303	01-Jun-2018	04-Jun-2018	08-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓
Amber Glass Bottle - Unpreserved (EP075-EM) RB304,	FB304	02-Jun-2018	04-Jun-2018	09-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB303,	FB303	01-Jun-2018	04-Jun-2018	08-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓
Amber Glass Bottle - Unpreserved (EP071) RB304,	FB304	02-Jun-2018	04-Jun-2018	09-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB303, TB303	FB303,	01-Jun-2018	05-Jun-2018	15-Jun-2018	✓	05-Jun-2018	15-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB304, TB304	FB304,	02-Jun-2018	05-Jun-2018	16-Jun-2018	✓	05-Jun-2018	16-Jun-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB303,	FB303	01-Jun-2018	04-Jun-2018	08-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓
Amber Glass Bottle - Unpreserved (EP071) RB304,	FB304	02-Jun-2018	04-Jun-2018	09-Jun-2018	✓	05-Jun-2018	14-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB303, TB303	FB303,	01-Jun-2018	05-Jun-2018	15-Jun-2018	✓	05-Jun-2018	15-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB304, TB304	FB304,	02-Jun-2018	05-Jun-2018	16-Jun-2018	✓	05-Jun-2018	16-Jun-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RB303, TB303	FB303,	01-Jun-2018	05-Jun-2018	15-Jun-2018	✓	05-Jun-2018	15-Jun-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB304, TB304	FB304,	02-Jun-2018	05-Jun-2018	16-Jun-2018	✓	05-Jun-2018	16-Jun-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	3	28	10.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	28	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	19	10.53	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	10	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Certificate of Analysis

GHD Melbourne
Level 8, 180 Lonsdale St
Melbourne
VIC 3000



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Kory Auch

Report 601521-S
Project name NORTH EAST LINK - CONTAMINATION ASSESSMENT
Project ID 31350060910
Received Date Jun 04, 2018

Client Sample ID			QC4001
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Jn03884
Date Sampled			Jun 02, 2018
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
Volatile Organics			
1.1-Dichloroethane	0.5	mg/kg	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5
Allyl chloride	0.5	mg/kg	< 0.5
Benzene	0.1	mg/kg	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5
Bromochloromethane	0.5	mg/kg	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5
Bromoform	0.5	mg/kg	< 0.5
Bromomethane	0.5	mg/kg	< 0.5

Client Sample ID			QC4001
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Jn03884
Date Sampled			Jun 02, 2018
Test/Reference	LOR	Unit	
Volatile Organics			
Carbon disulfide	0.5	mg/kg	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5
Chloroethane	0.5	mg/kg	< 0.5
Chloroform	0.5	mg/kg	< 0.5
Chloromethane	0.5	mg/kg	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1
Iodomethane	0.5	mg/kg	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5
o-Xylene	0.1	mg/kg	< 0.1
Styrene	0.5	mg/kg	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5
Toluene	0.1	mg/kg	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5
Xylenes - Total	0.3	mg/kg	< 0.3
Total MAH*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5
4-Bromofluorobenzene (surr.)	1	%	107
Toluene-d8 (surr.)	1	%	81
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5

Client Sample ID			QC4001
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Jn03884
Date Sampled			Jun 02, 2018
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	103
p-Terphenyl-d14 (surr.)	1	%	86
Organochlorine Pesticides			
Chlordanes - Total	0.1	mg/kg	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05
a-BHC	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-BHC	0.05	mg/kg	< 0.05
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05
Toxaphene	1	mg/kg	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	89
Tetrachloro-m-xylene (surr.)	1	%	84
Polychlorinated Biphenyls			
Aroclor-1016	0.1	mg/kg	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1

Client Sample ID			QC4001
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Jn03884
Date Sampled			Jun 02, 2018
Test/Reference	LOR	Unit	
Polychlorinated Biphenyls			
Total PCB*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	89
Tetrachloro-m-xylene (surr.)	1	%	84
Phenols (Halogenated)			
2-Chlorophenol	0.5	mg/kg	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	< 1
2,4,6-Trichlorophenol	1.0	mg/kg	< 1
2,6-Dichlorophenol	0.5	mg/kg	< 0.5
4-Chloro-3-methylphenol	1.0	mg/kg	< 1
Pentachlorophenol	1.0	mg/kg	< 1
Tetrachlorophenols - Total	1.0	mg/kg	< 1
Total Halogenated Phenol*	1	mg/kg	< 1
Phenols (non-Halogenated)			
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	< 20
2-Methyl-4,6-dinitrophenol	5	mg/kg	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2
2-Nitrophenol	1.0	mg/kg	< 1
2,4-Dimethylphenol	0.5	mg/kg	< 0.5
2,4-Dinitrophenol	5	mg/kg	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4
4-Nitrophenol	5	mg/kg	< 5
Dinoseb	20	mg/kg	< 20
Phenol	0.5	mg/kg	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20
Phenol-d6 (surr.)	1	%	85
Chromium (hexavalent)	1	mg/kg	< 1
Cyanide (total)	5	mg/kg	< 5
Fluoride	100	mg/kg	350
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	8.1
% Moisture	1	%	15
Heavy Metals			
Arsenic	2	mg/kg	3.5
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	32
Copper	5	mg/kg	11
Lead	5	mg/kg	12
Mercury	0.1	mg/kg	< 0.1
Molybdenum	5	mg/kg	< 5
Nickel	5	mg/kg	19
Selenium	2	mg/kg	< 2
Silver	0.2	mg/kg	< 0.2
Tin	10	mg/kg	< 10
Zinc	5	mg/kg	39

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Vic EPA IWRG 621 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Jun 07, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
Volatile Organics	Melbourne	Jun 07, 2018	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 07, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 07, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Jun 07, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	Jun 07, 2018	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Melbourne	Jun 07, 2018	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Phenols (Halogenated)	Melbourne	Jun 07, 2018	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Jun 07, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Chromium (hexavalent)	Melbourne	Jun 07, 2018	28 Day
- Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)			
Cyanide (total)	Melbourne	Jun 07, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride	Melbourne	Jun 08, 2018	28 Day
- Method: LTM-INO-4150 Determination of Total Fluoride PART A – CIC			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	Jun 07, 2018	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Metals IWRG 621 : Metals M12	Melbourne	Jun 07, 2018	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	Jun 05, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name: GHD Pty Ltd VIC
Address: Level 8, 180 Lonsdale St
Melbourne
VIC 3000

Project Name: NORTH EAST LINK - CONTAMINATION ASSESSMENT
Project ID: 31350060910

Order No.:
Report #: 601521
Phone: 8687 8000
Fax: 8687 8111

Received: Jun 4, 2018 5:01 PM
Due: Jun 12, 2018
Priority: 5 Day
Contact Name: Kory Auch

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Moisture Set	Vic EPA IW/RG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	QC4001	Jun 02, 2018	12:00AM	Soil	M18-Jn03884	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5			0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5			0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5			0.5	Pass	
Allyl chloride	mg/kg	< 0.5			0.5	Pass	
Benzene	mg/kg	< 0.1			0.1	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromochloromethane	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dibromomethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
trans-1,2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1,3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4,5-Trichlorophenol	mg/kg	< 1			1	Pass	
2,4,6-Trichlorophenol	mg/kg	< 1			1.0	Pass	
2,6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1.0	Pass	
Pentachlorophenol	mg/kg	< 1			1.0	Pass	
Tetrachlorophenols - Total	mg/kg	< 1			1.0	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4,6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2,4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Fluoride	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Molybdenum	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 0.2			0.2	Pass	
Tin	mg/kg	< 10			10	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	106			70-130	Pass	
TRH C10-C14	%	111			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	81			70-130	Pass	
1.1.1-Trichloroethane	%	85			70-130	Pass	
1.2-Dichlorobenzene	%	104			70-130	Pass	
1.2-Dichloroethane	%	96			70-130	Pass	
Benzene	%	90			70-130	Pass	
Ethylbenzene	%	115			70-130	Pass	
m&p-Xylenes	%	113			70-130	Pass	
Toluene	%	95			70-130	Pass	
Trichloroethene	%	92			70-130	Pass	
Xylenes - Total	%	112			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	91			70-130	Pass	
TRH C6-C10	%	100			70-130	Pass	
TRH >C10-C16	%	121			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	102			70-130	Pass	
Acenaphthylene	%	106			70-130	Pass	
Anthracene	%	116			70-130	Pass	
Benz(a)anthracene	%	85			70-130	Pass	
Benzo(a)pyrene	%	95			70-130	Pass	
Benzo(b&j)fluoranthene	%	88			70-130	Pass	
Benzo(g,h,i)perylene	%	87			70-130	Pass	
Benzo(k)fluoranthene	%	94			70-130	Pass	
Chrysene	%	105			70-130	Pass	
Dibenz(a,h)anthracene	%	89			70-130	Pass	
Fluoranthene	%	84			70-130	Pass	
Fluorene	%	115			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	85			70-130	Pass	
Naphthalene	%	102			70-130	Pass	
Phenanthrene	%	111			70-130	Pass	
Pyrene	%	86			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	111			70-130	Pass	
4,4'-DDE	%	111			70-130	Pass	
4,4'-DDT	%	95			70-130	Pass	
a-BHC	%	112			70-130	Pass	
Aldrin	%	118			70-130	Pass	
b-BHC	%	102			70-130	Pass	
d-BHC	%	103			70-130	Pass	
Dieldrin	%	116			70-130	Pass	
Endosulfan I	%	116			70-130	Pass	
Endosulfan II	%	110			70-130	Pass	
Endosulfan sulphate	%	107			70-130	Pass	
Endrin	%	101			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde			%	113			70-130	Pass	
Endrin ketone			%	113			70-130	Pass	
g-BHC (Lindane)			%	109			70-130	Pass	
Heptachlor			%	114			70-130	Pass	
Heptachlor epoxide			%	116			70-130	Pass	
Hexachlorobenzene			%	106			70-130	Pass	
Methoxychlor			%	95			70-130	Pass	
LCS - % Recovery									
Polychlorinated Biphenyls									
Aroclor-1260		%	85				70-130	Pass	
LCS - % Recovery									
Phenols (Halogenated)									
2-Chlorophenol		%	83				30-130	Pass	
2,4-Dichlorophenol		%	69				30-130	Pass	
2,4,5-Trichlorophenol		%	99				30-130	Pass	
2,4,6-Trichlorophenol		%	67				30-130	Pass	
2,6-Dichlorophenol		%	98				30-130	Pass	
4-Chloro-3-methylphenol		%	81				30-130	Pass	
Pentachlorophenol		%	36				30-130	Pass	
Tetrachlorophenols - Total		%	77				30-130	Pass	
LCS - % Recovery									
Phenols (non-Halogenated)									
2-Methylphenol (o-Cresol)		%	87				30-130	Pass	
2-Nitrophenol		%	68				30-130	Pass	
2,4-Dimethylphenol		%	76				30-130	Pass	
3&4-Methylphenol (m&p-Cresol)		%	85				30-130	Pass	
4-Nitrophenol		%	45				30-130	Pass	
Dinoseb		%	33				30-130	Pass	
Phenol		%	78				30-130	Pass	
LCS - % Recovery									
Chromium (hexavalent)		%	101				70-130	Pass	
Cyanide (total)		%	119				70-130	Pass	
Fluoride		%	100				70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic		%	94				80-120	Pass	
Cadmium		%	85				80-120	Pass	
Chromium		%	103				80-120	Pass	
Copper		%	97				80-120	Pass	
Lead		%	110				80-120	Pass	
Mercury		%	112				75-125	Pass	
Molybdenum		%	97				80-120	Pass	
Nickel		%	95				80-120	Pass	
Selenium		%	91				80-120	Pass	
Silver		%	115				80-120	Pass	
Tin		%	96				80-120	Pass	
Zinc		%	91				80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Jn01348	NCP	%	97			70-130	Pass	
TRH C10-C14	S18-Jn01339	NCP	%	72			70-130	Pass	
Spike - % Recovery									
Volatile Organics				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1.1-Dichloroethene	S18-Jn01348	NCP	%	79			70-130	Pass	
1.1.1-Trichloroethane	S18-Jn01348	NCP	%	82			70-130	Pass	
1.2-Dichlorobenzene	S18-Jn01348	NCP	%	118			70-130	Pass	
1.2-Dichloroethane	S18-Jn01348	NCP	%	109			70-130	Pass	
Benzene	S18-Jn01348	NCP	%	94			70-130	Pass	
Ethylbenzene	S18-Jn01348	NCP	%	101			70-130	Pass	
m&p-Xylenes	S18-Jn01348	NCP	%	121			70-130	Pass	
o-Xylene	S18-Jn01348	NCP	%	122			70-130	Pass	
Toluene	S18-Jn01348	NCP	%	100			70-130	Pass	
Trichloroethene	S18-Jn01348	NCP	%	93			70-130	Pass	
Xylenes - Total	S18-Jn01348	NCP	%	122			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Jn01348	NCP	%	82			70-130	Pass	
TRH C6-C10	S18-Jn01348	NCP	%	92			70-130	Pass	
TRH >C10-C16	S18-Jn01339	NCP	%	71			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M18-Jn02083	NCP	%	108			70-130	Pass	
Acenaphthylene	M18-Jn02083	NCP	%	85			70-130	Pass	
Anthracene	M18-Jn02083	NCP	%	86			70-130	Pass	
Benz(a)anthracene	M18-Jn03820	NCP	%	79			70-130	Pass	
Benzo(a)pyrene	M18-Jn03820	NCP	%	111			70-130	Pass	
Benzo(b&j)fluoranthene	M18-Jn03820	NCP	%	97			70-130	Pass	
Benzo(g,h,i)perylene	M18-Jn03820	NCP	%	124			70-130	Pass	
Benzo(k)fluoranthene	M18-Jn03820	NCP	%	116			70-130	Pass	
Chrysene	M18-Jn03820	NCP	%	79			70-130	Pass	
Dibenz(a,h)anthracene	M18-Jn03820	NCP	%	103			70-130	Pass	
Fluoranthene	M18-Jn03820	NCP	%	78			70-130	Pass	
Fluorene	M18-Jn02083	NCP	%	115			70-130	Pass	
Indeno(1,2,3-cd)pyrene	M18-Jn03820	NCP	%	119			70-130	Pass	
Naphthalene	M18-Jn02083	NCP	%	105			70-130	Pass	
Phenanthrene	M18-Jn02083	NCP	%	119			70-130	Pass	
Pyrene	M18-Jn03820	NCP	%	72			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4,4'-DDD	M18-Jn08236	NCP	%	113			70-130	Pass	
4,4'-DDE	M18-Jn08236	NCP	%	102			70-130	Pass	
4,4'-DDT	M18-Jn08236	NCP	%	99			70-130	Pass	
a-BHC	M18-Jn08236	NCP	%	90			70-130	Pass	
Aldrin	M18-Jn08236	NCP	%	96			70-130	Pass	
b-BHC	M18-Jn08236	NCP	%	84			70-130	Pass	
d-BHC	M18-Jn08236	NCP	%	87			70-130	Pass	
Dieldrin	M18-Jn08236	NCP	%	100			70-130	Pass	
Endosulfan I	M18-Jn08236	NCP	%	91			70-130	Pass	
Endosulfan II	M18-Jn08236	NCP	%	102			70-130	Pass	
Endosulfan sulphate	M18-Jn08236	NCP	%	102			70-130	Pass	
Endrin	M18-Jn08236	NCP	%	124			70-130	Pass	
Endrin aldehyde	M18-Jn08236	NCP	%	99			70-130	Pass	
Endrin ketone	M18-Jn08236	NCP	%	102			70-130	Pass	
g-BHC (Lindane)	M18-Jn08236	NCP	%	88			70-130	Pass	
Heptachlor	M18-Jn08236	NCP	%	105			70-130	Pass	
Heptachlor epoxide	M18-Jn08236	NCP	%	96			70-130	Pass	
Hexachlorobenzene	M18-Jn08236	NCP	%	89			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methoxychlor	M18-Jn08236	NCP	%	113			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	M18-Jn02125	NCP	%	71			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	M18-Jn04146	NCP	%	86			30-130	Pass	
2,4-Dichlorophenol	M18-Jn04146	NCP	%	65			30-130	Pass	
2,4,5-Trichlorophenol	M18-Jn04146	NCP	%	92			30-130	Pass	
2,4,6-Trichlorophenol	M18-Jn04146	NCP	%	71			30-130	Pass	
2,6-Dichlorophenol	M18-Jn04146	NCP	%	97			30-130	Pass	
4-Chloro-3-methylphenol	M18-Jn04146	NCP	%	82			30-130	Pass	
Pentachlorophenol	M18-Jn04146	NCP	%	39			30-130	Pass	
Tetrachlorophenols - Total	M18-Jn04146	NCP	%	69			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Methylphenol (o-Cresol)	M18-Jn04146	NCP	%	91			30-130	Pass	
2-Nitrophenol	M18-Jn04146	NCP	%	71			30-130	Pass	
2,4-Dimethylphenol	M18-Jn04146	NCP	%	68			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M18-Jn04146	NCP	%	86			30-130	Pass	
4-Nitrophenol	M18-Jn04146	NCP	%	56			30-130	Pass	
Dinoseb	M18-Jn04146	NCP	%	35			30-130	Pass	
Phenol	M18-Jn04146	NCP	%	94			30-130	Pass	
Spike - % Recovery									
				Result 1					
Chromium (hexavalent)	M18-Jn04148	NCP	%	100			70-130	Pass	
Cyanide (total)	M18-Jn04148	NCP	%	76			70-130	Pass	
Fluoride	M18-Jn08890	NCP	%	75			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M18-Jn05010	NCP	%	104			75-125	Pass	
Cadmium	M18-Jn05010	NCP	%	96			75-125	Pass	
Chromium	M18-Jn05010	NCP	%	118			75-125	Pass	
Copper	M18-Jn05010	NCP	%	106			75-125	Pass	
Lead	M18-Jn05010	NCP	%	111			75-125	Pass	
Mercury	M18-Jn05010	NCP	%	101			70-130	Pass	
Molybdenum	M18-Jn05010	NCP	%	107			75-125	Pass	
Nickel	M18-Jn05010	NCP	%	105			75-125	Pass	
Selenium	M18-Jn05010	NCP	%	96			75-125	Pass	
Silver	M18-Jn05010	NCP	%	107			75-125	Pass	
Tin	M18-Jn05010	NCP	%	91			75-125	Pass	
Zinc	M18-Jn05010	NCP	%	106			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M18-Jn03824	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S18-Jn04447	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S18-Jn04447	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S18-Jn04447	NCP	mg/kg	< 50	< 50	<1	30%	Pass	

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
1.1-Dichloroethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.4-Trichlorobenzene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Hexachlorobutadiene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1-Dichloroethene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1-Trichloroethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1.2-Tetrachloroethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2-Trichloroethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2.2-Tetrachloroethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dibromoethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichlorobenzene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloroethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloropropane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.3-Trichloropropane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.4-Trimethylbenzene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichlorobenzene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichloropropane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3.5-Trimethylbenzene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.4-Dichlorobenzene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Butanone (MEK)	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Propanone (Acetone)	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chlorotoluene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Methyl-2-pentanone (MIBK)	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Allyl chloride	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzene	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Bromobenzene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromochloromethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromodichloromethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromoform	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromomethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon disulfide	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon Tetrachloride	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chlorobenzene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroform	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloromethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.2-Dichloroethene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.3-Dichloropropene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromochloromethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromomethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dichlorodifluoromethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Ethylbenzene	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Iodomethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Isopropyl benzene (Cumene)	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
m&p-Xylenes	M18-Jn03824	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methylene Chloride	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
o-Xylene	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Styrene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Tetrachloroethene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Toluene	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
trans-1.2-Dichloroethene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
trans-1.3-Dichloropropene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichloroethene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichlorofluoromethane	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Vinyl chloride	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Xylenes - Total	M18-Jn03824	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M18-Jn03824	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	M18-Jn03824	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S18-Jn04447	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S18-Jn04447	NCP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S18-Jn04447	NCP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M18-Jn02753	NCP	mg/kg	0.9	1.4	48	30%	Fail Q15
Acenaphthylene	M18-Jn02753	NCP	mg/kg	6.3	6.4	2.0	30%	Pass
Anthracene	M18-Jn02753	NCP	mg/kg	9.5	12	21	30%	Pass
Benz(a)anthracene	Z18-Jn07572	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	Z18-Jn07572	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	Z18-Jn07572	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	Z18-Jn07572	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	Z18-Jn07572	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	Z18-Jn07572	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	Z18-Jn07572	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	Z18-Jn07572	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	M18-Jn02753	NCP	mg/kg	3.2	4.6	37	30%	Fail Q15
Indeno(1,2,3-cd)pyrene	Z18-Jn07572	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	M18-Jn02753	NCP	mg/kg	1.5	1.8	21	30%	Pass
Phenanthrene	M18-Jn02753	NCP	mg/kg	51	58	13	30%	Pass
Pyrene	Z18-Jn07572	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	M18-Jn03824	NCP	mg/kg	0.2	0.2	9.0	30%	Pass
4,4'-DDD	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	M18-Jn03824	NCP	mg/kg	0.11	0.10	9.0	30%	Pass
a-BHC	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	M18-Jn03824	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Toxaphene	M18-Jn03824	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1221	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1242	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1248	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1254	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass

Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1260	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Total PCB*	M18-Jn03824	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	M18-Jn02760	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	M18-Jn02760	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	M18-Jn02760	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	M18-Jn02760	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	M18-Jn02760	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	M18-Jn02760	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	M18-Jn02760	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	M18-Jn02760	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	M18-Jn02760	NCP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	M18-Jn02760	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	M18-Jn02760	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
2-Nitrophenol	M18-Jn02760	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	M18-Jn02760	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dinitrophenol	M18-Jn02760	NCP	mg/kg	< 5	< 5	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M18-Jn02760	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	M18-Jn02760	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	M18-Jn02760	NCP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	M18-Jn02760	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M18-Jn05011	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Cyanide (total)	M18-Jn05025	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Fluoride	M18-Jn03970	NCP	mg/kg	130	220	51	30%	Fail
pH (1:5 Aqueous extract at 25°C as rec.)	M18-Jn04148	NCP	pH Units	8.7	8.8	pass	30%	Pass
% Moisture	M18-Jn03882	NCP	%	17	17	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M18-Jn05010	NCP	mg/kg	14	14	<1	30%	Pass
Cadmium	M18-Jn05010	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M18-Jn05010	NCP	mg/kg	40	39	1.0	30%	Pass
Copper	M18-Jn05010	NCP	mg/kg	24	24	<1	30%	Pass
Lead	M18-Jn05010	NCP	mg/kg	17	17	1.0	30%	Pass
Mercury	M18-Jn05010	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Molybdenum	M18-Jn05010	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Nickel	M18-Jn05010	NCP	mg/kg	27	27	<1	30%	Pass
Selenium	M18-Jn05010	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M18-Jn05010	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tin	M18-Jn05010	NCP	mg/kg	< 10	< 10	<1	30%	Pass
Zinc	M18-Jn05010	NCP	mg/kg	63	63	<1	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Mary Makarios	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Michael Brancati	Senior Analyst-Inorganic (VIC)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EM1809091**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **MLM, SH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **11**
No. of samples analysed : **9**

Page : 1 of 19
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 05-Jun-2018 12:40
Date Analysis Commenced : 07-Jun-2018
Issue Date : 14-Jun-2018 16:29



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH005_0.2m	NEL-EF-BH005_1.0m	NEL-ENV-BH014_0.5m	NEL-BH185_0.2m	NEL-BH185_0.9m
Client sampling date / time					01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809091-001	EM1809091-003	EM1809091-005	EM1809091-006	EM1809091-007
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.8	7.1	7.4	4.8	5.5
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		19.4	23.5	15.8	17.5	29.2
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		5	<5	<5	<5	7
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		19	15	12	6	13
Lead	7439-92-1	5	mg/kg		32	20	11	16	13
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		23	14	17	9	53
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		39	32	26	35	93
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	0.6
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		160	200	340	200	200
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH005_0.2m	NEL-EF-BH005_1.0m	NEL-ENV-BH014_0.5m	NEL-BH185_0.2m	NEL-BH185_0.9m
Client sampling date / time					01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809091-001	EM1809091-003	EM1809091-005	EM1809091-006	EM1809091-007
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.06	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH005_0.2m	NEL-EF-BH005_1.0m	NEL-ENV-BH014_0.5m	NEL-BH185_0.2m	NEL-BH185_0.9m
Client sampling date / time				01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809091-001	EM1809091-003	EM1809091-005	EM1809091-006	EM1809091-007	
				Result	Result	Result	Result	Result	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.6	<0.5	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	<0.6	0.6	0.6	0.6	0.6	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-EF-BH005_0.2m	NEL-EF-BH005_1.0m	NEL-ENV-BH014_0.5m	NEL-BH185_0.2m	NEL-BH185_0.9m
Client sampling date / time				01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809091-001	EM1809091-003	EM1809091-005	EM1809091-006	EM1809091-007
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH005_0.2m	NEL-EF-BH005_1.0m	NEL-ENV-BH014_0.5m	NEL-BH185_0.2m	NEL-BH185_0.9m
Client sampling date / time					01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809091-001	EM1809091-003	EM1809091-005	EM1809091-006	EM1809091-007
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	130	<100
>C34 - C40 Fraction	----	100	mg/kg		120	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		120	<50	<50	130	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		58.8	98.2	61.0	73.2	69.6
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		76.1	76.2	76.5	80.3	77.4
Toluene-D8	2037-26-5	0.1	%		73.9	70.6	66.8	74.2	73.9
4-Bromofluorobenzene	460-00-4	0.1	%		87.8	86.0	86.3	88.0	86.6
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		108	103	108	118	103
2-Chlorophenol-D4	93951-73-6	0.025	%		75.5	71.6	74.9	81.8	72.6
2,4,6-Tribromophenol	118-79-6	0.025	%		78.2	81.5	70.2	96.6	81.4
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		73.4	77.5	81.1	83.5	76.4
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		75.5	77.0	79.0	86.4	75.5
2-Fluorobiphenyl	321-60-8	0.025	%		91.0	81.8	84.2	96.2	83.5
Anthracene-d10	1719-06-8	0.025	%		98.5	91.8	95.5	105	91.8
4-Terphenyl-d14	1718-51-0	0.025	%		110	100	105	114	99.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-BH186_0.2m	----	----	----	----
Client sampling date / time				01-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1809091-008	-----	-----	-----	-----
Result				----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	5.2	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	26.0	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	18	----	----	----	----
Lead	7439-92-1	5	mg/kg	14	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	27	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	27	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	500	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH186_0.2m	----	----	----	----
Client sampling date / time					01-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809091-008	-----	-----	-----	-----
				Result	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH186_0.2m	----	----	----	----
				Client sampling date / time	01-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809091-008	-----	-----	-----	-----
					Result	----	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH186_0.2m	----	----	----	----
Client sampling date / time					01-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809091-008	-----	-----	-----	-----
				Result	----	----	----	----	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH186_0.2m	----	----	----	----
Client sampling date / time					01-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809091-008	-----	-----	-----	-----
				Result		----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		79.0	----	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		74.6	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		68.8	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		81.7	----	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		108	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		77.3	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		82.0	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		83.4	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		81.0	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		87.2	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%		96.6	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		103	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB115	RB115	TB115	----	----
Client sampling date / time					01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809091-009	EM1809091-010	EM1809091-011	-----	-----
				Result	Result	Result		----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		6.40	5.87	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L		<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB115	RB115	TB115	----	----
Client sampling date / time					01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809091-009	EM1809091-010	EM1809091-011	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				FB115	RB115	TB115	----	----
Client sampling date / time				01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809091-009	EM1809091-010	EM1809091-011	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB115	RB115	TB115	----	----
Client sampling date / time					01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809091-009	EM1809091-010	EM1809091-011	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		81.0	88.9	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		94.9	88.8	----	----	----
Toluene-D8	2037-26-5	5	%		87.6	78.0	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		93.0	85.7	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		72.4	47.8	----	----	----
Anthracene-d10	1719-06-8	1.0	%		86.1	86.5	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		98.6	107	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		29.0	27.8	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		71.6	68.4	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		59.2	59.8	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB115	RB115	TB115	----	----
Client sampling date / time				01-Jun-2018 00:00	01-Jun-2018 00:00	01-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809091-009	EM1809091-010	EM1809091-011	-----	-----
				Result	Result	Result	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.25	%	83.8	76.0	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%	82.0	77.8	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%	81.0	79.8	----	----	----
Anthracene-d10	1719-06-8	0.25	%	79.5	80.4	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%	93.2	93.5	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	97.9	91.4	89.2	----	----
Toluene-D8	2037-26-5	2	%	84.0	74.9	69.8	----	----
4-Bromofluorobenzene	460-00-4	2	%	90.6	85.9	82.8	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136

Page : 19 of 19
Work Order : EM1809091
Client : GHD PTY LTD
Project : 31350060910



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD

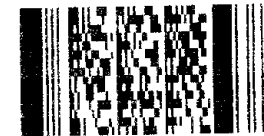


GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Page 1 of 1

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale										PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format																
Project North East Link - Contamination				Address: 2 - 4 Westall Rd, Springvale																										
GHD Contact David Quinn		Contact Email David.Quinn@ghd.com		Lab Contact: Shirley LeCornu																										
Standard TAT		Quote No./GHD Reference ME124/18		Container																										
Sample ID		Date		Time		Composite Sample	Sample Matrix S: Soil SL Sludge W: Water A: Air GW: Groundwater	Preservative	Type J: soil jar B: bag V: vial G: glass bottle P: plastic bottle	Number	Volume (mL)	HOLD	Analyses Required																	
1 NEL-EF-BH005-0.2m		01/06/18		AM			S		J	1	250	X																		
2 " " -0.5m		"		"			S		J	1	"	X																		
3 " " -1.0m		"		"			S		J	1	"	X																		
4 " " -1.5m		"		"			S		J	1	"	X																		
5 NEL-ENV-BH014-0.5m		"		"			S		J	1	"	X																		
6 NEL-BH185-0.2m		"		"			S		J	1	"	X																		
7 " " -0.9m		"		"			S		J	1	"	X																		
8 NEL-BH186-0.2m		"		"			S		J	1	"	X																		
9 FB115		"		"			W		VGP	8	"	X																		
10 RB115		"		"			W		VGP	8	"	X																		
11 TB115		"		"			W		V	1	"	X																		

Environmental Division
Melbourne
Work Order Reference
EM1809091



Telephone : + 61-3-8649 9600

Sampled by:	SH/MLM GTD	Date/Time:	01/06/18 AM	Relinquished by:	SH/MLM	Date/Time:	01/06/18 PM
Received by:	Core shed Bridge	Date/Time:	01/06/18 PM	Relinquished by:	Core shed fridge	Date/Time:	05/06/18 AM
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Mark Davidson	Date/Time:	5/6, 12:00				
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecon.com) & Nazuha Rosli (nazuha.rosli@aecon.com)						

Larissa Burns

Subject: FW: EM1809091 - GHD - 31/350006/0910

From: Rosli, Nazuha [mailto:nazuha.rosli@aecom.com]
Sent: Wednesday, 6 June 2018 3:05 PM
To: Larissa Burns
Cc: david.quinn@ghd.com
Subject: RE: EM1809091 - GHD - 31/350006/0910

Hi Larissa,

Please analyse:

- 1 1. NEL-EF-BH005_0.2m = IWRG621
- 3 2. NEL-EF-BH005_1.0m = IWRG621
- 5 3. NEL-ENV-BH014_0.5m = IWRG621
- 6 4. NEL-BH185_0.2m = IWRG621
- 7 5. NEL-BH185_0.9m = IWRG621
- 8 6. NEL-BH186_0.2m = IWRG621
- 10 7. RB115 = IWRG621 water equivalent
- 11 8. TB115 = Volatile TPH/BTEX
- 9 9. FB115 = IWRG621 water equivalent

At standard TAT. Thanks.

Nazuha Rosli
Senior Environmental Engineer
D +61 3 9653 8771 M +61 421 807 270
nazuha.rosli@aecom.com

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From: Larissa Burns [mailto:Larissa.Burns@alsglobal.com]
Sent: Tuesday, 5 June 2018 4:40 PM
To: david.quinn@ghd.com
Cc: Rosli, Nazuha
Subject: EM1809091 - GHD - 31/350006/0910

Good afternoon David,

Please find attached paperwork submitted with samples not marked for analysis. Looks like you've referenced ME/124/18 – Just wondering whether you require specific suites from this quote for these samples? I believe last time, Nazuha was able to assist.

Please advise how you would like us to proceed at your earliest convenience.

Kind regards,

Larissa Burns

Client Services Officer – Springvale
Environmental



T +61 3 8549 9600 **D** +61 3 8549 9644

F +61 3 8549 9601

larissa.burns@alsglobal.com

2-4 Westall Rd
Springvale Vic 3171
Australia

Ru Jayasinghe

From: Ru Jayasinghe on behalf of COC Melbourne
Sent: Tuesday, 5 June 2018 3:59 PM
To: Melbourne Enviro Services
Subject: EM1809091 - GHD - 31/350006/0910
Attachments: 05062018155203-0001.pdf

Hi All

Please see attached for samples received without analysis.

Regards

Ranil
Sample Receipt Officer – Springvale
Environmental

QUALITY CONTROL REPORT

Work Order	: EM1809091	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 05-Jun-2018
Order number	: ----	Date Analysis Commenced	: 07-Jun-2018
C-O-C number	: ----	Issue Date	: 14-Jun-2018
Sampler	: MLM, SH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 11		
No. of samples analysed	: 9		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1709627)									
EM1808831-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.8	8.9	1.13	0% - 20%
EM1809098-016	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.2	7.2	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1709319)									
EM1809091-001	NEL-EF-BH005_0.2m	EA055: Moisture Content	----	0.1	%	19.4	21.7	10.9	0% - 20%
EM1809100-030	Anonymous	EA055: Moisture Content	----	0.1	%	20.6	21.8	5.65	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1709662)									
EM1809073-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	20	21.0	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	26	7.37	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	24	15	44.4	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	34	28	17.9	No Limit
EM1809091-008	NEL-BH186_0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	27	23	16.3	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	15	19.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	12	12.2	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1709662) - continued									
EM1809091-008	NEL-BH186_0.2m	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	27	23	15.5	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1709663)									
EM1809073-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809091-008	NEL-BH186_0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1712132)									
EM1809045-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809084-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1712139)									
EM1809045-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809088-002	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1709043)									
EM1808982-037	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	280	260	8.24	No Limit
EM1809098-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	380	390	3.11	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1710329)									
EM1809091-001	NEL-EF-BH005_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809173-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.2	<0.2	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1708298)									
EM1809091-001	NEL-EF-BH005_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809197-004	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1708298)									
EM1809091-001	NEL-EF-BH005_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1809197-004	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1708298)									
EM1809091-001	NEL-EF-BH005_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1708298) - continued									
EM1809091-001	NEL-EF-BH005_0.2m	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1809197-004	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1710327)							
EM1809091-001	NEL-EF-BH005_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1710327) - continued									
EM1809091-001	NEL-EF-BH005_0.2m	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.06	<0.06	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1809173-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.14	<0.14	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1710327)									
EM1809091-001	NEL-EF-BH005_0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1809173-001	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<6	<6	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EM1809173-001	Anonymous	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1710327)									
EM1809091-001	NEL-EF-BH005_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1710327) - continued									
EM1809091-001	NEL-EF-BH005_0.2m	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809173-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1710327)									
EM1809091-001	NEL-EF-BH005_0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1710327) - continued									
EM1809091-001	NEL-EF-BH005_0.2m	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1809173-001	Anonymous	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.07	<0.07	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1708298)									
EM1809091-001	NEL-EF-BH005_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1809197-004	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1710328)									
EM1809091-001	NEL-EF-BH005_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	120	16.4	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	220	75.6	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809173-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	300	340	12.7	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	1200	1410	15.7	0% - 50%

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 Work Order : EM1809091
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1710328) - continued									
EM1809173-001	Anonymous	EP071-EM: C10 - C14 Fraction	----	50	mg/kg	50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1708298)									
EM1809091-001	NEL-EF-BH005_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1809197-004	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1710328)									
EM1809091-001	NEL-EF-BH005_0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	260	89.4	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	120	200	55.9	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809173-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	970	1120	14.7	0% - 50%
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	1570	1860	16.8	0% - 50%
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	70	70	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1711331)									
EM1808678-023	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.68	6.61	1.05	0% - 20%
EM1809116-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.96	6.93	0.432	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1708149)									
EM1809022-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809116-006	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0005	<0.0005	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.060	0.059	0.00	0% - 50%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.047	0.050	4.90	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.020	0.022	12.6	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.025	<0.025	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.05	<0.05	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1708151)									
EM1809091-009	FB115	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1708151) - continued									
EM1809116-008	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1708152)									
EM1809091-009	FB115	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1809116-008	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1712908)									
EM1808678-019	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809096-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1708414)									
EM1809091-009	FB115	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1711332)									
EM1808678-023	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.8	0.8	0.00	No Limit
EM1809116-004	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	4.3	4.3	0.00	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1710917)									
EM1809210-013	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1809205-029	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1710917)									
EM1809210-013	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1809205-029	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1710917) - continued									
EM1809205-029	Anonymous	EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1710917)									
EM1809210-013	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1809205-029	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1710917)									
EM1809210-013	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1809205-029	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1710915)									
EM1809210-013	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1809205-029	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1710915)									
EM1809210-013	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1809205-029	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1710915)									
EM1809210-013	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1809205-029	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit		



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1709662)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	92.1	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	85.7	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	86.1	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	86.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	90.0	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	92.4	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.0	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	96.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	90.9	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	95.8	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1709663)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.6	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1712132)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	89.2	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1712139)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	97.0	80	110
EK040T: Fluoride Total (QCLot: 1709043)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	84.2	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1710329)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	84.6	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1708298)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	87.0	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	84.2	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	86.6	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	84.8	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	87.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	85.3	74	114
EP074H: Naphthalene (QCLot: 1708298)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	96.7	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1708298)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	66.1	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	75.9	62	127



Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 1708298) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	89.6	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	80.7	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	87.4	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	84.8	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	78.0	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	75.9	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	90.9	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	77.3	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	91.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	77.3	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	93.7	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	97.2	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	86.3	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	89.7	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	93.1	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	93.3	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	94.8	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1710327)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	88.2	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	75.7	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	84.0	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	76.8	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	82.2	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	71.1	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	80.2	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	104	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	58.2	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1710327)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	90.0	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	92.1	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	92.2	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	79.0	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	83.4	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	61.9	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	74.7	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	68.5	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	69.5	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	48.5	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1710327)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	90.9	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	94.2	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	88.3	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	94.0	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	95.7	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	65.0	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	95.8	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	96.0	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	94.1	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	102	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	101	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	96.7	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	96.9	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	96.3	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	94.0	55	137
EP075I: Organochlorine Pesticides (QCLot: 1710327)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	88.2	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	91.6	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	89.0	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	89.2	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	92.2	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	89.2	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	86.8	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	87.1	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	87.4	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	87.2	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	87.0	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	87.7	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	89.2	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	70.6	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	72.0	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	87.3	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	88.8	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	84.1	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	90.8	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	98.8	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1708298)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	94.4	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1708149)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	103	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.4	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.2	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.2	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.6	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1708151)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	103	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1708152)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	89.3	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1712908)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1708414)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	91.5	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1711332)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	102	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1707917)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	89.8	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1710917)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1710917) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	89.5	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1710917)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	64.5	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	69.0	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	91.0	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	76.3	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	84.9	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	76.2	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	71.0	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	97.9	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	71.9	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	100	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	79.0	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	93.0	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	103	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	82.4	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1710917)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	90.1	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	88.6	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	93.5	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	87.8	62	119
EP074G: Trihalomethanes (QCLot: 1710917)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	88.5	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1707918)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	70.8	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	74.2	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	74.9	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	79.2	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	82.8	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	101	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	93.7	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	91.5	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	97.3	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	97.7	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	98.8	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	87.4	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	96.3	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1707918) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	93.9	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	94.3	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	95.3	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1707929)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	72.0	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	70.7	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	79.8	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	68.3	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	82.0	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	73.8	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	83.6	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	82.1	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	80.2	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1707929)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	30.5	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	66.3	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	53.6	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	73.3	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	82.7	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	105	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	30.8	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	82.4	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	101	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	108	32	135
EP075I: Organochlorine Pesticides (QCLot: 1707929)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	84.7	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	82.5	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	79.9	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	81.8	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	87.7	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	88.5	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	83.6	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	84.6	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	85.2	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1707919)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	85.4	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	92.6	60	133



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1712132) - continued							
EM1809045-003	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	63.4	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1712139)							
EM1809045-003	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	91.0	77	113
EK040T: Fluoride Total (QCLot: 1709043)							
EM1808982-043	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	88.5	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1710329)							
EM1809091-003	NEL-EF-BH005_1.0m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	103	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1708298)							
EM1809091-003	NEL-EF-BH005_1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	69.9	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	69.1	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1708298)							
EM1809091-003	NEL-EF-BH005_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	60.8	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	59.1	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	71.4	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1710327)							
EM1809091-001	NEL-EF-BH005_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	84.7	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	68.2	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	28.9	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1710327)							
EM1809091-001	NEL-EF-BH005_0.2m	EP075-EM: Phenol	108-95-2	1 mg/kg	87.6	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	64.6	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1710327)							
EM1809091-001	NEL-EF-BH005_0.2m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	87.6	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	78.4	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1708298)							
EM1809091-003	NEL-EF-BH005_1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	60.5	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1710328)							
EM1809091-005	NEL-ENV-BH014_0.5m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	99.1	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	100	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	90.9	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1708298)							
EM1809091-003	NEL-EF-BH005_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	58.4	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1710328)							
EM1809091-005	NEL-ENV-BH014_0.5m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	97.7	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	97.9	67	121

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 Work Order : EM1809091
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1710328) - continued							
EM1809091-005	NEL-ENV-BH014_0.5m	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	91.6	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1708149)							
EM1809022-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	99.2	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	97.7	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	93.9	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.3	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	92.7	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	97.6	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1708152)							
EM1809091-010	RB115	EG035F: Mercury	7439-97-6	0.01 mg/L	91.0	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1712908)							
EM1808678-020	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	111	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1708414)							
EM1809091-010	RB115	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	93.5	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1711332)							
EM1808678-021	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	70.8	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1710917)							
EM1809205-030	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	63.8	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	65.9	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1710917)							
EM1809205-030	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	85.8	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1710915)							
EM1809205-030	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	55.2	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1710915)							
EM1809205-030	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	54.6	44	122
EP080: BTEXN (QCLot: 1710915)							
EM1809205-030	Anonymous	EP080: Benzene	71-43-2	20 µg/L	74.6	68	130
		EP080: Toluene	108-88-3	20 µg/L	76.8	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1809091	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 05-Jun-2018
Site	: ----	Issue Date	: 14-Jun-2018
Sampler	: MLM, SH	No. of samples received	: 11
Order number	:	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

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 Work Order : EM1809091
 Client : GHD PTY LTD
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Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP080S: TPH(V)/BTEX Surrogates	EM1809091-011	TB115	Toluene-D8	2037-26-5	69.8 %	70-125 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
FB115,	RB115	----	----	----	08-Jun-2018	01-Jun-2018	7

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	08-Jun-2018	08-Jun-2018	✓	08-Jun-2018	08-Jun-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	----	----	----	07-Jun-2018	15-Jun-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	08-Jun-2018	28-Nov-2018	✓	08-Jun-2018	28-Nov-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	08-Jun-2018	29-Jun-2018	✓	08-Jun-2018	29-Jun-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	08-Jun-2018	29-Jun-2018	✓	08-Jun-2018	15-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	08-Jun-2018	15-Jun-2018	✓	13-Jun-2018	22-Jun-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	07-Jun-2018	29-Jun-2018	✓	12-Jun-2018	29-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	07-Jun-2018	15-Jun-2018	✓	08-Jun-2018	17-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	07-Jun-2018	08-Jun-2018	✔	08-Jun-2018	08-Jun-2018	✔
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	07-Jun-2018	08-Jun-2018	✔	08-Jun-2018	08-Jun-2018	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	07-Jun-2018	08-Jun-2018	✔	08-Jun-2018	08-Jun-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	07-Jun-2018	15-Jun-2018	✔	08-Jun-2018	17-Jul-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	07-Jun-2018	15-Jun-2018	✔	08-Jun-2018	17-Jul-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	07-Jun-2018	15-Jun-2018	✔	08-Jun-2018	17-Jul-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	07-Jun-2018	15-Jun-2018	✔	08-Jun-2018	17-Jul-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-EF-BH005_0.2m, NEL-ENV-BH014_0.5m, NEL-BH185_0.9m,	NEL-EF-BH005_1.0m, NEL-BH185_0.2m, NEL-BH186_0.2m	01-Jun-2018	07-Jun-2018	08-Jun-2018	✔	08-Jun-2018	08-Jun-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)		01-Jun-2018	07-Jun-2018	08-Jun-2018	✔	08-Jun-2018	08-Jun-2018	✔
NEL-EF-BH005_0.2m, NEL-EF-BH005_1.0m,								
NEL-ENV-BH014_0.5m, NEL-BH185_0.2m,								
NEL-BH185_0.9m, NEL-BH186_0.2m								

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Evaluation	Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation		Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) FB115,	RB115	01-Jun-2018	----	----	----	08-Jun-2018	01-Jun-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) FB115,	RB115	01-Jun-2018	----	----	----	07-Jun-2018	28-Nov-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) FB115,	RB115	01-Jun-2018	----	----	----	12-Jun-2018	15-Jun-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) FB115,	RB115	01-Jun-2018	----	----	----	08-Jun-2018	29-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) FB115,	RB115	01-Jun-2018	----	----	----	07-Jun-2018	15-Jun-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) FB115,	RB115	01-Jun-2018	----	----	----	08-Jun-2018	29-Jun-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) FB115,	RB115	01-Jun-2018	07-Jun-2018	08-Jun-2018	✓	07-Jun-2018	17-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) FB115,	RB115	01-Jun-2018	08-Jun-2018	15-Jun-2018	✓	08-Jun-2018	15-Jun-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB115,	RB115	01-Jun-2018	08-Jun-2018	15-Jun-2018	✓	08-Jun-2018	15-Jun-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB115,	RB115	01-Jun-2018	08-Jun-2018	15-Jun-2018	✓	08-Jun-2018	15-Jun-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) FB115,	RB115	01-Jun-2018	08-Jun-2018	15-Jun-2018	✓	08-Jun-2018	15-Jun-2018	✓



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB115, RB115	01-Jun-2018	07-Jun-2018	08-Jun-2018	✓	07-Jun-2018	17-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) FB115, RB115	01-Jun-2018	07-Jun-2018	08-Jun-2018	✓	08-Jun-2018	17-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) FB115, RB115	01-Jun-2018	07-Jun-2018	08-Jun-2018	✓	08-Jun-2018	17-Jul-2018	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075-EM) FB115, RB115	01-Jun-2018	07-Jun-2018	08-Jun-2018	✓	08-Jun-2018	17-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) FB115, RB115	01-Jun-2018	07-Jun-2018	08-Jun-2018	✓	07-Jun-2018	17-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB115, TB115, RB115	01-Jun-2018	08-Jun-2018	15-Jun-2018	✓	08-Jun-2018	15-Jun-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) FB115, RB115	01-Jun-2018	07-Jun-2018	08-Jun-2018	✓	07-Jun-2018	17-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB115, TB115, RB115	01-Jun-2018	08-Jun-2018	15-Jun-2018	✓	08-Jun-2018	15-Jun-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) FB115, TB115, RB115	01-Jun-2018	08-Jun-2018	15-Jun-2018	✓	08-Jun-2018	15-Jun-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.

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Work Order : EM1809091
Client : GHD PTY LTD
Project : 31350060910



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order	: EM1809096	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 05-Jun-2018 12:40
Order number	:	Date Analysis Commenced	: 06-Jun-2018
C-O-C number	: ----	Issue Date	: 13-Jun-2018 16:00
Sampler	: KORY AUCH		
Site	: North East Link - Contamination Assessment		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 7		
No. of samples analysed	: 4		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID		NEL-ENV-BH023_0.6-0.7	----	----	----	----
Client sampling date / time			05-Jun-2018 10:35		----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1809096-004	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	7.3	----	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	13.3	----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	6	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	19	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	26	----	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	74	----	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	141	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	560	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH023_0.6-0.7	----	----	----	----
Client sampling date / time					05-Jun-2018 10:35	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809096-004	-----	-----	-----	-----
Result						----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH023_0.6-0.7	----	----	----	----
Client sampling date / time					05-Jun-2018 10:35	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809096-004	-----	-----	-----	-----
				Result		----	----	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg		<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

NEL-ENV-BH023_0.6-0.7

Client sampling date / time

05-Jun-2018 10:35

Compound	CAS Number	LOR	Unit	Result				
				EM1809096-004	-----	-----	-----	-----
				Result	----	----	----	----

EP075B: Polynuclear Aromatic Hydrocarbons - Continued

^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----
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EP075I: Organochlorine Pesticides

alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH023_0.6-0.7	----	----	----	----
Client sampling date / time					05-Jun-2018 10:35	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809096-004	-----	-----	-----	-----
Result						----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)		----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction		----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction		----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction		----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)		----	50	mg/kg	<50	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)		----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		66.5	----	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		73.4	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		70.1	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		83.7	----	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		105	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		73.2	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		76.5	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		78.4	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		79.6	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		83.5	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%		92.4	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		99.8	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB305	FB305	TB305	----	----
Client sampling date / time				05-Jun-2018 11:00	05-Jun-2018 11:00	05-Jun-2018 11:00	----	----
Compound	CAS Number	LOR	Unit	EM1809096-005	EM1809096-006	EM1809096-007	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.77	5.56	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB305	FB305	TB305	----	----
Client sampling date / time					05-Jun-2018 11:00	05-Jun-2018 11:00	05-Jun-2018 11:00	----	----
Compound	CAS Number	LOR	Unit		EM1809096-005	EM1809096-006	EM1809096-007	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2,4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB305	FB305	TB305	----	----
Client sampling date / time				05-Jun-2018 11:00	05-Jun-2018 11:00	05-Jun-2018 11:00	----	----
Compound	CAS Number	LOR	Unit	EM1809096-005	EM1809096-006	EM1809096-007	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB305	FB305	TB305	----	----
Client sampling date / time					05-Jun-2018 11:00	05-Jun-2018 11:00	05-Jun-2018 11:00	----	----
Compound	CAS Number	LOR	Unit		EM1809096-005	EM1809096-006	EM1809096-007	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		93.1	108	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		91.4	86.3	----	----	----
Toluene-D8	2037-26-5	5	%		89.2	86.6	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		101	94.6	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		30.3	35.5	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		66.4	84.8	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		82.4	85.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		87.0	103	----	----	----
Anthracene-d10	1719-06-8	1.0	%		96.7	103	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		109	117	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB305	FB305	TB305	----	----
Client sampling date / time					05-Jun-2018 11:00	05-Jun-2018 11:00	05-Jun-2018 11:00	----	----
Compound	CAS Number	LOR	Unit		EM1809096-005	EM1809096-006	EM1809096-007	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		23.6	23.0	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		59.2	57.3	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		66.4	63.0	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		84.2	84.1	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		77.1	76.4	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		77.4	76.6	----	----	----
Anthracene-d10	1719-06-8	0.25	%		77.7	75.6	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		84.0	82.8	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		103	97.3	98.8	----	----
Toluene-D8	2037-26-5	2	%		104	86.5	89.2	----	----
4-Bromofluorobenzene	460-00-4	2	%		101	94.2	94.4	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Sampled by:	Kory Auch / Kym	Date/Time:	05-JUN-2018 @ 12:00	Relinquished by:		Date/Time:	
Received by:		Date/Time:		Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Mark (Auch)	Date/Time:	5/6, 12:00				
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1809096**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link - Contamination Assessment		
Sampler	: KORY AUCH		

Dates

Date Samples Received	: 05-Jun-2018 12:40	Issue Date	: 05-Jun-2018
Client Requested Due Date	: 13-Jun-2018	Scheduled Reporting Date	: 13-Jun-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 3.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 7 / 4

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB305	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB305	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB305	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB305	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB305	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB305	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM1809096-004 : 05-Jun-2018 10:35 : NEL-ENV-BH023_0.6-0.7

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1809096-001	05-Jun-2018 10:00	NEL-ENV-BH023_0.1-0.2	✓		
EM1809096-002	05-Jun-2018 10:15	NEL-ENV-BH023_0.3-0.4	✓		
EM1809096-003	05-Jun-2018 10:25	NEL-ENV-BH023_0.5-0.6	✓		
EM1809096-004	05-Jun-2018 10:35	NEL-ENV-BH023_0.6-0.7		✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water V/C EPA IWRG621 - Water Equivalent Suite	WATER - W-04 TRH/BTEXN
EM1809096-005	05-Jun-2018 11:00	RB305	✓	
EM1809096-006	05-Jun-2018 11:00	FB305	✓	
EM1809096-007	05-Jun-2018 11:00	TB305		✓



Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL ACCOUNTS

- A4 - AU Tax Invoice (INV)	Email	ap-fss@ghd.com
-----------------------------	-------	----------------

GHD LAB REPORTS

- *AU Certificate of Analysis - NATA (COA)	Email	GHDLabreports@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	GHDLabreports@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	GHDLabreports@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	GHDLabreports@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	GHDLabreports@ghd.com
- Electronic SRN for ESdat (ESRN_ESDAT)	Email	GHDLabreports@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	GHDLabreports@ghd.com

KORY AUCH

- *AU Certificate of Analysis - NATA (COA)	Email	kory.auch@ghd.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kory.auch@ghd.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kory.auch@ghd.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kory.auch@ghd.com
- A4 - AU Tax Invoice (INV)	Email	kory.auch@ghd.com
- Chain of Custody (CoC) (COC)	Email	kory.auch@ghd.com
- EDI Format - ENMRG (ENMRG)	Email	kory.auch@ghd.com
- EDI Format - ESDAT (ESDAT)	Email	kory.auch@ghd.com
- Electronic SRN for ESdat (ESRN_ESDAT)	Email	kory.auch@ghd.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	kory.auch@ghd.com

MARK DAVIDSON

- *AU Certificate of Analysis - NATA (COA)	Email	mark.s.davidson@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	mark.s.davidson@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	mark.s.davidson@aecom.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	mark.s.davidson@aecom.com
- Chain of Custody (CoC) (COC)	Email	mark.s.davidson@aecom.com
- EDI Format - ENMRG (ENMRG)	Email	mark.s.davidson@aecom.com
- EDI Format - ESDAT (ESDAT)	Email	mark.s.davidson@aecom.com
- Electronic SRN for ESdat (ESRN_ESDAT)	Email	mark.s.davidson@aecom.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	mark.s.davidson@aecom.com

NAZUHA ROSLI

- *AU Certificate of Analysis - NATA (COA)	Email	nazuha.rosli@aecom.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	nazuha.rosli@aecom.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	nazuha.rosli@aecom.com
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- EDI Format - ESDAT (ESDAT)	Email	nazuha.rosli@aecom.com
- Electronic SRN for ESdat (ESRN_ESDAT)	Email	nazuha.rosli@aecom.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	nazuha.rosli@aecom.com

QUALITY CONTROL REPORT

Work Order	: EM1809096	Page	: 1 of 18
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 05-Jun-2018
Order number	:	Date Analysis Commenced	: 06-Jun-2018
C-O-C number	: ----	Issue Date	: 13-Jun-2018
Sampler	: KORY AUCH		
Site	: North East Link - Contamination Assessment		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 7		
No. of samples analysed	: 4		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1711423)									
EM1809096-004	NEL-ENV-BH023_0.6-0.7	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.3	7.2	1.38	0% - 20%
EM1809103-009	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.0	8.0	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1704136)									
EM1809021-073	Anonymous	EA055: Moisture Content	----	0.1	%	5.8	6.1	5.66	No Limit
EM1809073-012	Anonymous	EA055: Moisture Content	----	0.1	%	16.5	15.6	5.42	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1709662)									
EM1809073-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	20	21.0	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	26	7.37	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	24	15	44.4	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	34	28	17.9	No Limit
EM1809091-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	27	23	16.3	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	15	19.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	12	12.2	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1709662) - continued									
EM1809091-008	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	27	23	15.5	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1709663)									
EM1809073-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809091-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1712133)									
EM1809094-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809103-006	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1712141)									
EM1809096-004	NEL-ENV-BH023_0.6-0.7	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809103-008	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1704056)									
EM1808831-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	290	300	6.10	No Limit
EM1809075-012	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	50	50	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1710329)									
EM1809091-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809173-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.2	<0.2	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1704019)									
EM1809089-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1704019)									
EM1809089-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1704019)									
EM1809089-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1704019) - continued									
EM1809089-001	Anonymous	EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1710327)									
EM1809091-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.06	<0.06	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1809173-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.14	<0.14	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1710327)									
EM1809091-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1710327) - continued									
EM1809173-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<6	<6	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1710327)									
EM1809091-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809173-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1710327) - continued									
EM1809173-001	Anonymous	EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1710327)									
EM1809091-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1809173-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1710327) - continued									
EM1809173-001	Anonymous	EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1704019)									
EM1809089-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1710328)									
EM1809091-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	120	16.4	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	220	75.6	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809173-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	300	340	12.7	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	1200	1410	15.7	0% - 50%
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1704019)									
EM1809089-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1710328)									
EM1809091-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	260	89.4	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	120	200	55.9	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809173-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	970	1120	14.7	0% - 50%
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	1570	1860	16.8	0% - 50%
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	70	70	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1703710)									
EM1809064-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.96	6.97	0.144	0% - 20%
EM1809096-005	RB305	EA005-P: pH Value	----	0.01	pH Unit	6.77	5.83	14.9	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1703892)									
EM1809010-019	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1703893)									
EM1809056-007	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.005	0.005	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.054	0.053	2.71	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.008	0.008	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.208	0.205	1.16	0% - 20%



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1703893) - continued									
EM1809056-007	Anonymous	EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1703894)									
EM1809096-005	RB305	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1712908)									
EM1808678-019	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809096-006	FB305	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1704375)									
EM1809077-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1703712)									
EM1809096-005	RB305	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1703615)									
EM1809096-005	RB305	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1703615)									
EM1809096-005	RB305	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1703615)									
EM1809096-005	RB305	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1703615)									
EM1809096-005	RB305	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1703614)									
EM1809096-005	RB305	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1703614)									
EM1809096-005	RB305	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit

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 Work Order : EM1809096
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1703614)									
EM1809096-005	RB305	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1709662)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	92.1	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	85.7	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	86.1	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	86.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	90.0	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	92.4	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.0	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	96.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	90.9	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	95.8	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1709663)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.6	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1712133)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	97.2	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1712141)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	94.8	80	110
EK040T: Fluoride Total (QCLot: 1704056)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	94.5	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1710329)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	84.6	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1704019)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	114	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	115	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	114	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	109	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	102	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	110	74	114
EP074H: Naphthalene (QCLot: 1704019)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	88.2	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1704019)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	118	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	120	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1704019) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	# 109	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	115	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	107	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	105	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	112	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	116	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	100	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	109	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	99.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	105	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	109	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	98.9	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	110	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	109	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	97.7	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	97.7	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	95.6	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1710327)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	88.2	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	75.7	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	84.0	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	76.8	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	82.2	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	71.1	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	80.2	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	104	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	58.2	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1710327)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	90.0	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	92.1	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	92.2	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	79.0	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	83.4	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	61.9	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	74.7	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	68.5	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	69.5	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	48.5	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1710327)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	90.9	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	94.2	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	88.3	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	94.0	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	95.7	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	65.0	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	95.8	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	96.0	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	94.1	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	102	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	101	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	96.7	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	96.9	55	137
EP075-EM: Dibenzo(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	96.3	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	94.0	55	137
EP075I: Organochlorine Pesticides (QCLot: 1710327)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	88.2	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	91.6	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	89.0	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	89.2	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	92.2	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	89.2	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	86.8	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	87.1	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	87.4	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	87.2	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	87.0	63	136
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	87.7	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	89.2	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	70.6	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	72.0	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	87.3	66	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	88.8	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	84.1	63	139
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	90.8	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	98.8	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1704019)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	111	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1703892)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	106	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1703893)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.4	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.3	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	98.1	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.4	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	100	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1703894)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.2	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1712908)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1704375)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	100	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1703712)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	104	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1703907)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	70.4	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1703615)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit						
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1703615) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	90.2	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1703615)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	72.1	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	76.9	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	97.8	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	81.6	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	90.5	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	83.7	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	79.9	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	97.6	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	78.2	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	97.8	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	80.0	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	94.0	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	96.9	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	91.5	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1703615)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	91.6	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	90.6	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	95.1	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	90.0	62	119
EP074G: Trihalomethanes (QCLot: 1703615)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	93.3	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1703908)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	97.2	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	94.4	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	97.8	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	97.7	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	96.6	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	107	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	98.2	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	95.7	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	92.3	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	97.1	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	93.8	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	103	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	102	56	126

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1703908) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	93.2	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	92.8	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	94.1	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1703909)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	67.7	44	114
EP075-EM: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	79.8	53	121
EP075-EM: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	78.7	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	70.1	57	116
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	84.3	51	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	77.3	56	120
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	85.2	41	125
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	82.5	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	76.9	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1703909)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	26.3	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	# 136	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	60.2	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	88.2	53	123
EP075-EM: 2.4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	88.2	52	128
EP075-EM: 2.4-Dinitrophenol	51-28-5	100	µg/L	<100	120 µg/L	72.1	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	28.7	13	60
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	83.6	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	89.4	55	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	127	32	135
EP075I: Organochlorine Pesticides (QCLot: 1703909)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	86.7	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	87.3	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	84.4	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	85.4	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	85.7	60	132
EP075-EM: 4.4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	89.4	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	87.0	59	130
EP075-EM: 4.4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	85.8	62	136
EP075-EM: 4.4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	88.2	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1703614)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	88.8	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1703905)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1703905) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	85.0	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	88.1	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	86.8	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1703614)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	88.7	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1703905)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	85.8	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	87.4	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	89.5	58	137
EP080: BTEXN (QCLot: 1703614)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	94.7	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.3	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	96.6	73	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	96.5	72	131
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	99.1	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	94.4	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1709662)							
EM1809073-008	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	95.9	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.8	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	88.0	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	92.2	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	85.9	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	88.3	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	88.9	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	86.5	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1709663)							
EM1809073-008	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.3	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1712133)							
EM1809096-004	NEL-ENV-BH023_0.6-0.7	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	87.4	58	114



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1712141)							
EM1809100-049	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	97.3	77	113
EK040T: Fluoride Total (QCLot: 1704056)							
EM1809045-001	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	86.2	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1710329)							
EM1809091-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	103	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1704019)							
EM1809089-003	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	102	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	99.6	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1704019)							
EM1809089-003	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	108	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	92.0	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	99.7	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1710327)							
EM1809091-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	84.7	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	68.2	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	28.9	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1710327)							
EM1809091-001	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	87.6	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	64.6	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1710327)							
EM1809091-001	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	87.6	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	78.4	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1704019)							
EM1809089-003	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	83.2	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1710328)							
EM1809091-005	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	99.1	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	100	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	90.9	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1704019)							
EM1809089-003	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	81.2	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1710328)							
EM1809091-005	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	97.7	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	97.9	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	91.6	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1703893)							
EM1809056-007	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	96.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	98.9	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	98.3	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	93.4	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	91.9	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	90.5	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1703894)							
EM1809096-006	FB305	EG035F: Mercury	7439-97-6	0.01 mg/L	90.2	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1712908)							
EM1808678-020	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	111	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1704375)							
EM1809096-005	RB305	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	94.8	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1703712)							
EM1809096-006	FB305	EK040P: Fluoride	16984-48-8	5 mg/L	113	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1703615)							
EM1809096-006	FB305	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	46.4	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	55.2	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1703615)							
EM1809096-006	FB305	EP074: Chlorobenzene	108-90-7	20 µg/L	72.7	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1703614)							
EM1809096-006	FB305	EP080: C6 - C9 Fraction	----	280 µg/L	52.7	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1703614)							
EM1809096-006	FB305	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	53.2	44	122
EP080: BTEXN (QCLot: 1703614)							
EM1809096-006	FB305	EP080: Benzene	71-43-2	20 µg/L	77.2	68	130
		EP080: Toluene	108-88-3	20 µg/L	76.4	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1809096	Page	: 1 of 12
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 05-Jun-2018
Site	: North East Link - Contamination Assessment	Issue Date	: 13-Jun-2018
Sampler	: KORY AUCH	No. of samples received	: 7
Order number	:	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank** value outliers occur.
- **NO Duplicate** outliers occur.
- **NO Matrix Spike** outliers occur.
- Laboratory Control outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP074I: Volatile Halogenated Compounds	QC-1704019-001	----	Methylene chloride	75-09-2	109 %	68-107%	Recovery greater than upper control limit

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075A: Phenolic Compounds (Non-halogenated)	QC-1703909-001	----	2-Methylphenol	95-48-7	136 %	49-107%	Recovery greater than upper control limit

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural RB305, FB305		----	----	----	06-Jun-2018	05-Jun-2018	1

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	9	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	08-Jun-2018	12-Jun-2018	✓	08-Jun-2018	08-Jun-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	----	----	----	06-Jun-2018	19-Jun-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	08-Jun-2018	02-Dec-2018	✓	08-Jun-2018	02-Dec-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	08-Jun-2018	03-Jul-2018	✓	08-Jun-2018	03-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	08-Jun-2018	03-Jul-2018	✓	08-Jun-2018	15-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	08-Jun-2018	19-Jun-2018	✓	13-Jun-2018	22-Jun-2018	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	06-Jun-2018	03-Jul-2018	✓	07-Jun-2018	03-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	07-Jun-2018	19-Jun-2018	✓	08-Jun-2018	17-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	06-Jun-2018	12-Jun-2018	✓	06-Jun-2018	12-Jun-2018	✓
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	06-Jun-2018	12-Jun-2018	✓	06-Jun-2018	12-Jun-2018	✓
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	06-Jun-2018	12-Jun-2018	✓	06-Jun-2018	12-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	07-Jun-2018	19-Jun-2018	✓	08-Jun-2018	17-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	07-Jun-2018	19-Jun-2018	✓	08-Jun-2018	17-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	07-Jun-2018	19-Jun-2018	✔	08-Jun-2018	17-Jul-2018	✔
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	07-Jun-2018	19-Jun-2018	✔	08-Jun-2018	17-Jul-2018	✔
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	06-Jun-2018	12-Jun-2018	✔	06-Jun-2018	12-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	07-Jun-2018	19-Jun-2018	✔	08-Jun-2018	17-Jul-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	06-Jun-2018	12-Jun-2018	✔	06-Jun-2018	12-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH023_0.6-0.7	05-Jun-2018	07-Jun-2018	19-Jun-2018	✔	08-Jun-2018	17-Jul-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) RB305, FB305	05-Jun-2018	----	----	----	06-Jun-2018	05-Jun-2018	✘	
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) RB305, FB305	05-Jun-2018	----	----	----	06-Jun-2018	02-Dec-2018	✔	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) RB305, FB305	05-Jun-2018	----	----	----	07-Jun-2018	19-Jun-2018	✔	
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB305, FB305	05-Jun-2018	----	----	----	08-Jun-2018	03-Jul-2018	✔	
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) RB305, FB305	05-Jun-2018	----	----	----	06-Jun-2018	19-Jun-2018	✔	
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB305, FB305	05-Jun-2018	----	----	----	06-Jun-2018	03-Jul-2018	✔	
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB305, FB305	05-Jun-2018	06-Jun-2018	12-Jun-2018	✔	06-Jun-2018	16-Jul-2018	✔	



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB305,	FB305	05-Jun-2018	06-Jun-2018	19-Jun-2018	✓	07-Jun-2018	19-Jun-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB305,	FB305	05-Jun-2018	06-Jun-2018	19-Jun-2018	✓	07-Jun-2018	19-Jun-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB305,	FB305	05-Jun-2018	06-Jun-2018	19-Jun-2018	✓	07-Jun-2018	19-Jun-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB305,	FB305	05-Jun-2018	06-Jun-2018	19-Jun-2018	✓	07-Jun-2018	19-Jun-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB305,	FB305	05-Jun-2018	06-Jun-2018	12-Jun-2018	✓	06-Jun-2018	16-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB305,	FB305	05-Jun-2018	06-Jun-2018	12-Jun-2018	✓	06-Jun-2018	16-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB305,	FB305	05-Jun-2018	06-Jun-2018	12-Jun-2018	✓	06-Jun-2018	16-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB305,	FB305	05-Jun-2018	06-Jun-2018	12-Jun-2018	✓	06-Jun-2018	16-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB305,	FB305	05-Jun-2018	06-Jun-2018	12-Jun-2018	✓	06-Jun-2018	16-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB305, TB305	FB305,	05-Jun-2018	06-Jun-2018	19-Jun-2018	✓	07-Jun-2018	19-Jun-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB305,	FB305	05-Jun-2018	06-Jun-2018	12-Jun-2018	✓	06-Jun-2018	16-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB305, TB305	FB305,	05-Jun-2018	06-Jun-2018	19-Jun-2018	✓	07-Jun-2018	19-Jun-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RB305, TB305	FB305,	05-Jun-2018	06-Jun-2018	19-Jun-2018	✓	07-Jun-2018	19-Jun-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	3	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	9	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	3	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	9	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1809231**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **GHD**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **7**
No. of samples analysed : **5**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 07-Jun-2018 15:45
Date Analysis Commenced : 13-Jun-2018
Issue Date : 19-Jun-2018 16:36



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH019_0.2m	NEL-EF-BH019_1.0m	----	----	----
Client sampling date / time					07-Jun-2018 00:00	07-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809231-001	EM1809231-003	-----	-----	-----
				Result	Result		----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.7	5.7	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		21.2	16.9	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	11	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		13	21	----	----	----
Lead	7439-92-1	5	mg/kg		22	42	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		16	7	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		35	40	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		210	320	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH019_0.2m	NEL-EF-BH019_1.0m	----	----	----
Client sampling date / time					07-Jun-2018 00:00	07-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809231-001	EM1809231-003	-----	-----	-----
				Result	Result		----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH019_0.2m	NEL-EF-BH019_1.0m	----	----	----
Client sampling date / time				07-Jun-2018 00:00	07-Jun-2018 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1809231-001	EM1809231-003	-----	-----	-----	
				Result	Result	----	----	----	

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH019_0.2m	NEL-EF-BH019_1.0m			
Client sampling date / time					07-Jun-2018 00:00	07-Jun-2018 00:00			
Compound	CAS Number	LOR	Unit		EM1809231-001	EM1809231-003			
					Result	Result			
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	0.06	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	0.06	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	0.06	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH019_0.2m	NEL-EF-BH019_1.0m	----	----	----
Client sampling date / time					07-Jun-2018 00:00	07-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809231-001	EM1809231-003	-----	-----	-----
				Result	Result		----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		107	98.2	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		82.8	84.0	----	----	----
Toluene-D8	2037-26-5	0.1	%		78.3	78.0	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		92.8	92.3	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		100	90.0	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		74.4	67.5	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		99.9	98.7	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		89.2	83.2	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		101	92.5	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		105	99.3	----	----	----
Anthracene-d10	1719-06-8	0.025	%		105	103	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		127	128	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB118	RB118	FB118	----	----
Client sampling date / time					07-Jun-2018 00:00	07-Jun-2018 00:00	07-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809231-005	EM1809231-006	EM1809231-007	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		----	5.18	5.37	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		----	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		----	<0.0001	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L		----	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L		----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L		----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L		----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L		----	<0.01	<0.01	----	----
Tin	7440-31-5	0.001	mg/L		----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L		----	<0.005	<0.005	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	<0.0001	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		----	<0.01	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		----	<0.004	<0.004	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		----	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		----	<1	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		----	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		----	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		----	<5	<5	----	----
Methylene chloride	75-09-2	5	µg/L		----	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		----	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		----	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		----	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		----	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		----	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L		----	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				TB118	RB118	FB118	----	----
Client sampling date / time				07-Jun-2018 00:00	07-Jun-2018 00:00	07-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809231-005	EM1809231-006	EM1809231-007	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	----	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	----	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	----	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	----	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	----	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	----	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	----	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	----	<5	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	----	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	----	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	----	<2	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	----	<2	<2	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB118	RB118	FB118	----	----
Client sampling date / time					07-Jun-2018 00:00	07-Jun-2018 00:00	07-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809231-005	EM1809231-006	EM1809231-007	-----	-----
					Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,6-Dichlorophenol	87-65-0	2	µg/L		----	<2	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L		----	<4	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L		----	<2	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L		----	<2	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L		----	<2	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L		----	<2	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L		----	<2	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	4	µg/L		----	<4	<4	----	----
2-Methylphenol	95-48-7	4	µg/L		----	<4	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L		----	<4	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L		----	<4	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L		----	<4	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L		----	<100	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L		----	<50	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L		----	<50	<50	----	----
Dinoseb	88-85-7	50	µg/L		----	<50	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L		----	<50	<50	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	µg/L		----	<0.5	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L		----	<0.5	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L		----	<0.5	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		----	<0.5	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		----	<0.5	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L		----	<0.5	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L		----	<0.5	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L		----	<0.5	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L		----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L		----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L		----	<50	<50	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB118	RB118	FB118	----	----
Client sampling date / time				07-Jun-2018 00:00	07-Jun-2018 00:00	07-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809231-005	EM1809231-006	EM1809231-007	-----	-----
				Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	<100	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	----	101	99.1	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	----	111	109	----	----
Toluene-D8	2037-26-5	5	%	----	95.8	94.6	----	----
4-Bromofluorobenzene	460-00-4	5	%	----	102	101	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	----	34.6	33.0	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	----	81.0	76.6	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	----	73.3	67.7	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	----	95.8	91.1	----	----
Anthracene-d10	1719-06-8	1.0	%	----	97.7	95.6	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	----	112	109	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB118	RB118	FB118	----	----
Client sampling date / time					07-Jun-2018 00:00	07-Jun-2018 00:00	07-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809231-005	EM1809231-006	EM1809231-007	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		----	29.0	28.9	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		----	67.5	68.3	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		----	63.0	63.4	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		----	80.5	81.6	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		----	79.8	79.9	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		----	79.0	79.3	----	----
Anthracene-d10	1719-06-8	0.25	%		----	77.6	78.8	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		----	87.1	87.9	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		92.0	92.7	84.2	----	----
Toluene-D8	2037-26-5	2	%		92.6	94.5	81.9	----	----
4-Bromofluorobenzene	460-00-4	2	%		103	106	96.2	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



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[illegible]

Environmental Division
Melbourne
Work Order Reference
EM1809231



Telephone : + 81-3-8549 9600

Sampled by:	GHD	Date/Time:	7/6/18 Am	Relinquished by:	No. 6 Mexico	Date/Time:	7/6/18 Pm
Received by:	COURIER	Date/Time:	7/6/18 Pm	Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Markel Amy	Date/Time:	7/6 1525				
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

Peter Ravlic

From: David Quinn <David.Quinn@ghd.com>
Sent: Friday, 8 June 2018 4:51 PM
To: Peter Ravlic
Cc: Mark Clough; Kory.Auch@ghd.com; Robyn Madsen
Subject: RE: ON HOLD - EM1809231 & 9233 & 9234 - GHD 31350060910 North East Link

Hi Peter

Please analyse the below all at standard TAT and please send QC2004 to Eurofins for IWRG621 analysis.

Can you also please include Mark Clough and Kory Auch as recipients for the results.

EM1809231

1. NEL-EF-BH0019_0.2m = IWRG621
3. NEL-EF-BH0019_1.0m = IWRG621
6. RB115 = IWRG621 water equivalent
5. TB115 = Volatile TPH/BTEX
7. FB115 = IWRG621 water equivalent

9233

1. NEL-BH165_0.2m = IWRG621
2. NEL-BH165_0.5m = IWRG621
3. NEL-ENV-BH022_0.2m = IWRG621
4. NEL-ENV-BH022_0.5m = IWRG621
5. NEL-ENV-BH022_1.5m = IWRG621
7. NEL-BH162_0.2m = IWRG621
8. NEL-BH162_1.0m = IWRG621
9. RB115 = IWRG621 water equivalent
10. TB115 = Volatile TPH/BTEX
11. FB115 = IWRG621 water equivalent

9234

1. NEL-BH138_0.35m = IWRG621
3. NEL-BH138_1.0m = IWRG621
4. NEL-BH138_1.5m = IWRG621
5. NEL-EF-BH016_0.2m = IWRG621
7. NEL-EF-BH016_1.0m = IWRG621
9. NEL-EF-BH017_0.5m = IWRG621
10. NEL-EF-BH017_1.0m = IWRG621
11. NEL-EF-BH017_1.5m = IWRG621
12. QC1004 = IWRG621
13. RB116 = IWRG621 water equivalent
14. TB116 = Volatile TPH/BTEX
15. FB116 = IWRG621 water equivalent

Cheers

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance

GHD
Proudly employee owned

QUALITY CONTROL REPORT

Work Order	: EM1809231	Page	: 1 of 17
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 07-Jun-2018
Order number	: ----	Date Analysis Commenced	: 13-Jun-2018
C-O-C number	: ----	Issue Date	: 19-Jun-2018
Sampler	: GHD		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 7		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1726026)									
EM1809231-001	NEL-EF-BH019_0.2m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.7	6.6	1.50	0% - 20%
EM1809345-027	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.4	8.3	1.20	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1722757)									
EM1809092-001	Anonymous	EA055: Moisture Content	----	0.1	%	14.8	14.7	0.00	0% - 50%
EM1809099-001	Anonymous	EA055: Moisture Content	----	0.1	%	11.4	11.2	1.54	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1726880)									
EM1809231-001	NEL-EF-BH019_0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	16	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	10	69.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	14	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	22	23	6.26	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	35	38	7.34	No Limit
EM1809403-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	8	47.7	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1726880) - continued									
EM1809403-008	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1726879)									
EM1809231-001	NEL-EF-BH019_0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809403-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1723422)									
EM1809230-067	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809233-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1726921)									
EM1809170-016	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809170-035	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1722531)									
EM1809230-046	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	200	200	0.00	No Limit
EM1809230-086	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	200	210	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1722432)									
EM1809231-001	NEL-EF-BH019_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1722246)									
EM1809231-001	NEL-EF-BH019_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1722246)									
EM1809231-001	NEL-EF-BH019_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1722246)									
EM1809231-001	NEL-EF-BH019_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1722246) - continued									
EM1809231-001	NEL-EF-BH019_0.2m	EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1722430)									
EM1809231-001	NEL-EF-BH019_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1722430)									
EM1809231-001	NEL-EF-BH019_0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1722430)									
EM1809231-001	NEL-EF-BH019_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1722430) - continued									
EM1809231-001	NEL-EF-BH019_0.2m	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1722430)									
EM1809231-001	NEL-EF-BH019_0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1722246)									
EM1809231-001	NEL-EF-BH019_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1722431)									
EM1809231-001	NEL-EF-BH019_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1722246)									
EM1809231-001	NEL-EF-BH019_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1722431)									
EM1809231-001	NEL-EF-BH019_0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1722431) - continued									
EM1809231-001	NEL-EF-BH019_0.2m	EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1725827)									
EM1808885-007	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	9.02	8.38	7.36	0% - 20%
EM1809320-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	9.05	9.10	0.551	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1727271)									
EM1808885-006	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1727273)									
EM1809336-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.022	0.023	0.00	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.010	0.010	0.00	0% - 50%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.021	0.020	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1808885-006	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1727272)									
EM1809336-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1808885-006	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1727385)									
EM1808885-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809410-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1730275)									
EM1809113-150	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1809323-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.106	0.118	11.0	0% - 20%
EK040P: Fluoride by PC Titrator (QC Lot: 1725828)									
EM1808885-007	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1809320-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.3	1.3	0.00	0% - 50%



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1808885-006	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1808885-006	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1808885-006	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit

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 Work Order : EM1809231
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074G: Trihalomethanes (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1808885-006	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1723555)									
EM1809318-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1808885-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1723555)									
EM1809318-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1808885-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1723555)									
EM1809318-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1808885-006	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1726880)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	92.8	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	94.6	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	86.2	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	86.8	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	92.7	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	89.2	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.1	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.5	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	89.0	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	92.7	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1726879)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	87.0	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1723422)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	77.0	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1726921)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	93.3	80	110
EK040T: Fluoride Total (QCLot: 1722531)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	91.0	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1722432)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	110	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1722246)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	84.9	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	84.0	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	81.2	71	122
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	81.7	70	118
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	84.2	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	82.2	74	114
EP074H: Naphthalene (QCLot: 1722246)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	84.4	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1722246)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	85.5	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	75.4	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1722246) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	89.3	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	80.0	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	85.2	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	85.8	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	80.2	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	75.3	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	92.5	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	83.6	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	87.5	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	77.3	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	86.9	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.4	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	77.2	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.3	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	76.8	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	82.4	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	76.0	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1722430)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	89.2	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	92.8	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	108	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	99.0	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	116	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	105	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	94.2	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	101	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	69.8	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1722430)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	90.1	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	100	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	92.8	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	92.3	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	114	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	125	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	86.6	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	102	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	114	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	82.4	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1722430)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	95.2	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	96.9	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	113	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	104	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	104	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	67.6	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	102	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	98.1	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	98.7	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	109	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	97.2	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	93.6	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	96.4	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	99.7	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	93.9	55	137
EP075I: Organochlorine Pesticides (QCLot: 1722430)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	109	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	96.6	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	112	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	107	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	97.6	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	101	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	97.2	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	100	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	91.7	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	91.9	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	93.5	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	102	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	95.4	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	87.6	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	85.4	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	99.9	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	110	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	94.5	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	112	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	114	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1722246)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	80.2	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1727271)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	105	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1727273)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.8	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.8	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	88.4	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.1	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	92.1	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	91.4	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	91.0	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	92.8	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.2	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1727272)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	90.5	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1727385)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	108	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1730275)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	92.2	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1725828)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	112	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1724162)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	90.3	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1723557)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit	Result					
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1723557) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	93.3	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1723557)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	72.6	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	82.1	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	106	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	85.4	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	96.7	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	86.2	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	80.8	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	95.6	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	90.5	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	99.2	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	84.8	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	91.3	75	112
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	99.5	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	93.4	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1723557)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	94.8	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	96.2	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	96.5	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	92.2	62	119
EP074G: Trihalomethanes (QCLot: 1723557)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	96.5	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1724163)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	86.1	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	86.3	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	90.0	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	90.4	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	92.7	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	110	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.2	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	93.2	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	95.4	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	96.3	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	96.3	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	98.8	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	97.6	56	126

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1724163) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	96.1	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	95.9	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	97.2	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1724123)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	74.9	44	114
EP075-EM: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	74.1	53	121
EP075-EM: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	82.2	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	70.5	57	116
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	84.0	51	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	75.4	56	120
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	87.2	41	125
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	89.4	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	81.8	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1724123)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	33.6	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	66.4	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	59.6	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	77.7	53	123
EP075-EM: 2.4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	87.2	52	128
EP075-EM: 2.4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	84.2	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	24.7	13	60
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	68.9	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	82.8	55	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	107	32	135
EP075I: Organochlorine Pesticides (QCLot: 1724123)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	90.4	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	96.5	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	91.3	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	94.6	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	93.7	60	132
EP075-EM: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	97.3	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	95.3	59	130
EP075-EM: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	92.9	62	136
EP075-EM: 4.4`-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	95.5	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1723555)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	88.5	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1724164)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
CAS Number	LOR	Unit	Result			LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1724164) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	73.7	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	76.6	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	74.8	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1723555)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	85.2	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1724164)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	74.3	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	74.8	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	76.3	58	137
EP080: BTEXN (QCLot: 1723555)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	96.7	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.0	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	98.2	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	96.0	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	98.0	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	90.6	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1726880)							
EM1809231-003	NEL-EF-BH019_1.0m	EG005T: Arsenic	7440-38-2	50 mg/kg	100	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.7	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	91.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	95.7	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	89.4	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	94.3	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	89.3	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	94.3	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1726879)							
EM1809231-003	NEL-EF-BH019_1.0m	EG035T: Mercury	7439-97-6	5 mg/kg	99.8	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1723422)							
EM1809230-068	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	76.0	58	114



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1726921)							
EM1809170-020	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	87.1	77	113
EK040T: Fluoride Total (QCLot: 1722531)							
EM1809230-052	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	102	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1722432)							
EM1809233-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	110	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1722246)							
EM1809231-003	NEL-EF-BH019_1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	91.1	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	93.4	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1722246)							
EM1809231-003	NEL-EF-BH019_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	95.1	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	86.5	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	93.0	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1722430)							
EM1809231-003	NEL-EF-BH019_1.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	89.9	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	94.0	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	113	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1722430)							
EM1809231-003	NEL-EF-BH019_1.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	87.1	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	82.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1722430)							
EM1809231-003	NEL-EF-BH019_1.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	96.1	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	100	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1722246)							
EM1809231-003	NEL-EF-BH019_1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	99.6	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1722431)							
EM1809233-001	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	112	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	118	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	111	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1722246)							
EM1809231-003	NEL-EF-BH019_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	97.6	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1722431)							
EM1809233-001	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	113	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	116	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	104	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1727273)							
EM1808885-006	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	92.3	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	90.2	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	77.7	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.2	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	86.1	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	87.2	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1727272)							
EM1808885-007	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	92.8	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1727385)							
EM1808885-007	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	107	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1730275)							
EM1808885-007	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	90.2	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1725828)							
EM1809231-006	RB118	EK040P: Fluoride	16984-48-8	5 mg/L	115	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1723557)							
EM1808885-007	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	68.0	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	66.6	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1723557)							
EM1808885-007	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	75.4	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1723555)							
EM1808885-007	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	61.2	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1723555)							
EM1808885-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	60.2	44	122
EP080: BTEXN (QCLot: 1723555)							
EM1808885-007	Anonymous	EP080: Benzene	71-43-2	20 µg/L	75.9	68	130
		EP080: Toluene	108-88-3	20 µg/L	77.6	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1809231**

Page : 1 of 12

Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Project : **31350060910**
Site : **----**
Sampler : **GHD**
Order number :

Laboratory : **Environmental Division Melbourne**
Telephone : **+61-3-8549 9630**
Date Samples Received : **07-Jun-2018**
Issue Date : **19-Jun-2018**
No. of samples received : **7**
No. of samples analysed : **5**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
RB118, FB118	----	----	----	14-Jun-2018	07-Jun-2018	7

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Container / Client Sample ID(s)							
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001)							
NEL-EF-BH019_0.2m, NEL-EF-BH019_1.0m	07-Jun-2018	14-Jun-2018	14-Jun-2018	✔	14-Jun-2018	14-Jun-2018	✔
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
NEL-EF-BH019_0.2m, NEL-EF-BH019_1.0m	07-Jun-2018	----	----	----	13-Jun-2018	21-Jun-2018	✔
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
NEL-EF-BH019_0.2m, NEL-EF-BH019_1.0m	07-Jun-2018	14-Jun-2018	04-Dec-2018	✔	14-Jun-2018	04-Dec-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	14-Jun-2018	05-Jul-2018	✓	15-Jun-2018	05-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	14-Jun-2018	05-Jul-2018	✓	14-Jun-2018	21-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	14-Jun-2018	21-Jun-2018	✓	15-Jun-2018	28-Jun-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	13-Jun-2018	05-Jul-2018	✓	15-Jun-2018	05-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	13-Jun-2018	23-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	13-Jun-2018	14-Jun-2018	✓	13-Jun-2018	14-Jun-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	13-Jun-2018	14-Jun-2018	✓	13-Jun-2018	14-Jun-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	13-Jun-2018	14-Jun-2018	✓	13-Jun-2018	14-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	13-Jun-2018	23-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	13-Jun-2018	23-Jul-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	13-Jun-2018	23-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	13-Jun-2018	23-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH019_0.2m,	NEL-EF-BH019_1.0m	07-Jun-2018	13-Jun-2018	14-Jun-2018	✓	13-Jun-2018	14-Jun-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH019_0.2m, NEL-EF-BH019_1.0m		07-Jun-2018	13-Jun-2018	14-Jun-2018	✔	13-Jun-2018	14-Jun-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) RB118, FB118	07-Jun-2018	----	----	----	14-Jun-2018	07-Jun-2018	✖	
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) RB118, FB118	07-Jun-2018	----	----	----	15-Jun-2018	04-Dec-2018	✓	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) RB118, FB118	07-Jun-2018	----	----	----	18-Jun-2018	21-Jun-2018	✓	
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB118, FB118	07-Jun-2018	----	----	----	14-Jun-2018	05-Jul-2018	✓	
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) RB118, FB118	07-Jun-2018	----	----	----	17-Jun-2018	21-Jun-2018	✓	
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB118, FB118	07-Jun-2018	----	----	----	14-Jun-2018	05-Jul-2018	✓	
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB118, FB118	07-Jun-2018	14-Jun-2018	14-Jun-2018	✓	14-Jun-2018	24-Jul-2018	✓	
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB118, FB118	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	14-Jun-2018	21-Jun-2018	✓	
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB118, FB118	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	14-Jun-2018	21-Jun-2018	✓	
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB118, FB118	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	14-Jun-2018	21-Jun-2018	✓	
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB118, FB118	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	14-Jun-2018	21-Jun-2018	✓	



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB118, FB118	07-Jun-2018	14-Jun-2018	14-Jun-2018	✓	14-Jun-2018	24-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) RB118, FB118	07-Jun-2018	14-Jun-2018	14-Jun-2018	✓	14-Jun-2018	24-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) RB118, FB118	07-Jun-2018	14-Jun-2018	14-Jun-2018	✓	14-Jun-2018	24-Jul-2018	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075-EM) RB118, FB118	07-Jun-2018	14-Jun-2018	14-Jun-2018	✓	14-Jun-2018	24-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) RB118, FB118	07-Jun-2018	14-Jun-2018	14-Jun-2018	✓	14-Jun-2018	24-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB118, FB118	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	14-Jun-2018	21-Jun-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) RB118, FB118	07-Jun-2018	14-Jun-2018	14-Jun-2018	✓	14-Jun-2018	24-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB118, FB118	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	14-Jun-2018	21-Jun-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) TB118, FB118	07-Jun-2018	13-Jun-2018	21-Jun-2018	✓	14-Jun-2018	21-Jun-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	6	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	6	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.

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Work Order : EM1809231
Client : GHD PTY LTD
Project : 31350060910



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1809233**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **GHD**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **12**
No. of samples analysed : **10**

Page : 1 of 19
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 07-Jun-2018 15:45
Date Analysis Commenced : 13-Jun-2018
Issue Date : 19-Jun-2018 15:40



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EG035T: EM1809368 #10, Poor matrix spike recovery for Mercury due to matrix effects.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH165_0.2m	NEL-BH165_0.5m	NEL-ENV-BH022_0.2m	NEL-ENV-BH022_0.5m	NEL-ENV-BH022_1.5m
Client sampling date / time					06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809233-001	EM1809233-002	EM1809233-003	EM1809233-004	EM1809233-006
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		4.7	5.1	4.8	5.1	6.2
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.4	23.4	25.2	26.1	21.0
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		5	5	8	11	8
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		7	16	18	39	46
Lead	7439-92-1	5	mg/kg		14	14	33	24	16
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		12	35	14	27	15
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		12	21	16	22	13
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		210	200	640	340	750
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH165_0.2m	NEL-BH165_0.5m	NEL-ENV-BH022_0.2m	NEL-ENV-BH022_0.5m	NEL-ENV-BH022_1.5m
Client sampling date / time				06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809233-001	EM1809233-002	EM1809233-003	EM1809233-004	EM1809233-006
				Result	Result	Result	Result	Result
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH165_0.2m	NEL-BH165_0.5m	NEL-ENV-BH022_0.2m	NEL-ENV-BH022_0.5m	NEL-ENV-BH022_1.5m
Client sampling date / time				06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809233-001	EM1809233-002	EM1809233-003	EM1809233-004	EM1809233-006
				Result	Result	Result	Result	Result

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH165_0.2m	NEL-BH165_0.5m	NEL-ENV-BH022_0.2m	NEL-ENV-BH022_0.5m	NEL-ENV-BH022_1.5m
Client sampling date / time				06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809233-001	EM1809233-002	EM1809233-003	EM1809233-004	EM1809233-006
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH165_0.2m	NEL-BH165_0.5m	NEL-ENV-BH022_0.2m	NEL-ENV-BH022_0.5m	NEL-ENV-BH022_1.5m
Client sampling date / time				06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809233-001	EM1809233-002	EM1809233-003	EM1809233-004	EM1809233-006
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	104	85.0	116	92.2	88.6
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	86.0	78.6	87.4	83.1	86.2
Toluene-D8	2037-26-5	0.1	%	80.1	75.8	85.6	78.8	85.2
4-Bromofluorobenzene	460-00-4	0.1	%	83.5	86.6	94.6	80.9	89.0
EP075S: Acid Extractable Surrogates								
Phenol-d6	13127-88-3	0.025	%	96.0	90.5	97.4	79.6	82.8
2-Chlorophenol-D4	93951-73-6	0.025	%	72.5	69.0	73.3	59.9	61.8
2,4,6-Tribromophenol	118-79-6	0.025	%	104	92.0	104	83.1	82.2
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.025	%	89.9	86.3	88.2	72.8	75.2
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	101	97.6	99.6	81.0	84.4
2-Fluorobiphenyl	321-60-8	0.025	%	102	101	105	88.6	90.8
Anthracene-d10	1719-06-8	0.025	%	104	102	104	90.7	94.1
4-Terphenyl-d14	1718-51-0	0.025	%	127	129	129	116	120



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH162_0.2m	NEL-BH162_1.0m	----	----	----
Client sampling date / time					06-Jun-2018 00:00	06-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809233-007	EM1809233-009	-----	-----	-----
					Result	Result	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		4.6	6.3	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.9	23.3	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		<5	13	----	----	----
Lead	7439-92-1	5	mg/kg		7	12	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		5	28	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		7	23	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		510	560	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH162_0.2m	NEL-BH162_1.0m	----	----	----
Client sampling date / time					06-Jun-2018 00:00	06-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809233-007	EM1809233-009	-----	-----	-----
					Result	Result	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH162_0.2m	NEL-BH162_1.0m	----	----	----
Client sampling date / time				06-Jun-2018 00:00	06-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1809233-007	EM1809233-009	-----	-----	-----
				Result	Result	----	----	----

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH162_0.2m	NEL-BH162_1.0m	----	----	----
Client sampling date / time				06-Jun-2018 00:00	06-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1809233-007	EM1809233-009	-----	-----	-----
				Result	Result	----	----	----

EP075I: Organochlorine Pesticides - Continued

alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----
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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH162_0.2m	NEL-BH162_1.0m	----	----	----
Client sampling date / time					06-Jun-2018 00:00	06-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809233-007	EM1809233-009	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		77.3	90.8	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		84.9	83.7	----	----	----
Toluene-D8	2037-26-5	0.1	%		85.4	79.8	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		88.1	89.0	----	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		85.0	101	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		63.3	75.7	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		92.8	103	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		78.2	92.9	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		88.2	106	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		95.2	113	----	----	----
Anthracene-d10	1719-06-8	0.025	%		97.2	111	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		124	126	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB117	RB117	FB117	----	----
Client sampling date / time				06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809233-010	EM1809233-011	EM1809233-012	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	5.14	5.39	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	----	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L	----	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	----	<0.01	<0.01	----	----
Tin	7440-31-5	0.001	mg/L	----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	----	<0.005	<0.005	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	----	<0.01	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	----	<0.004	<0.004	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	----	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	----	<1	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	----	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	----	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	----	<5	<5	----	----
Methylene chloride	75-09-2	5	µg/L	----	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	----	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	----	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	----	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	----	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	----	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L	----	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB117	RB117	FB117	----	----
Client sampling date / time					06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809233-010	EM1809233-011	EM1809233-012	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		----	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L		----	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		----	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		----	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		----	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		----	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		----	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		----	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		----	<5	<5	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		----	<5	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		----	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L		----	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L		----	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L		----	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L		----	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L		----	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L		----	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		----	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		----	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		----	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		----	<2	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		----	<2	<2	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB117	RB117	FB117	----	----
Client sampling date / time				06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809233-010	EM1809233-011	EM1809233-012	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	----	<2	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	----	<4	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	----	<2	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	----	<2	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	----	<2	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	----	<2	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	----	<2	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	----	<4	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	----	<4	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	----	<4	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	----	<4	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	----	<4	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	----	<100	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	----	<50	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	----	<50	<50	----	----
Dinoseb	88-85-7	50	µg/L	----	<50	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	----	<50	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	----	<0.5	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	----	<0.5	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	----	<0.5	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	<0.5	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	----	<0.5	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB117	RB117	FB117	----	----
Client sampling date / time					06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809233-010	EM1809233-011	EM1809233-012	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		----	98.5	94.0	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		----	89.0	89.1	----	----
Toluene-D8	2037-26-5	5	%		----	97.9	82.0	----	----
4-Bromofluorobenzene	460-00-4	5	%		----	99.7	85.3	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	38.1	38.6	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	75.7	73.8	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	70.8	70.1	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	98.5	94.3	----	----
Anthracene-d10	1719-06-8	1.0	%		----	97.1	92.4	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	110	105	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB117	RB117	FB117	----	----
Client sampling date / time					06-Jun-2018 00:00	06-Jun-2018 00:00	06-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809233-010	EM1809233-011	EM1809233-012	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		----	32.1	28.8	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		----	73.5	62.8	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		----	65.7	55.9	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		----	83.6	72.2	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		----	81.9	71.4	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		----	82.8	70.3	----	----
Anthracene-d10	1719-06-8	0.25	%		----	81.2	70.0	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		----	90.7	77.5	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		88.2	92.1	84.4	----	----
Toluene-D8	2037-26-5	2	%		87.2	92.2	82.1	----	----
4-Bromofluorobenzene	460-00-4	2	%		101	103	95.8	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129


GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line.																	
Project North East Link - Contamination				Address: 2 - 4 Westall Rd, Springvale		Lab Contact: Shirley LeCornu																	
GHD Contact David Quinn		Contact Email David.Quinn@ghd.com		Quote No./GHD Reference ME/124/18		Analyses Required																	
Standard TAT		Sample I.D.		Date		Time		Composite Sample		Sample Matrix		Preservative		Container		Type		Number		Volume (mL)		HOLD	
		NEL-BH165_0.2m		6/6/18		PM		S		S		J		1		250		X					
		NEL-BH165_0.5m		"		"		S		S		J		1		250		X					
		NEL-ENV-BH022_0.2m		"		AM		S		S		J		1		250		X					
		NEL-ENV-BH022_0.5m		"		"		S		S		J		1		250		X					
		NEL-ENV-BH022_1.0m		"		"		S		S		J		1		250		X					
		NEL-ENV-BH022_1.5m		"		"		S		S		J		1		250		X					
		NEL-BH162_0.2m		"		AM		S		S		J		1		250		X					
		NEL-BH162_0.5m		"		AM		S		S		J		1		250		X					
		NEL-BH162_1.0m		"		AM		S		S		J		1		250		X					
		TB117		"		PM		W		W		V/LP		1		X							
		RB117		"		PM		W		W		V/LP		8		X							
		FB117		"		PM		W		W		V/LP		8		X							

Environmental Division
Melbourne
Work Order Reference
EM1809233



* telephone + 61-3-8649 9600

Sampled by:	GHD	Date/Time:	6/6/18	Relinquished by:	M. Lo Monaco	Date/Time:	6/6/18 Pm
Received by:	LORE SHED FRIEZE	Date/Time:	6/6/18 Pm	Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	MANUEL GROSZ	Date/Time:	7/6 1545				
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

Peter Ravlic

From: David Quinn <David.Quinn@ghd.com>
Sent: Friday, 8 June 2018 4:51 PM
To: Peter Ravlic
Cc: Mark Clough; Kory.Auch@ghd.com; Robyn Madsen
Subject: RE: ON HOLD - EM1809231 & 9233 & 9234 - GHD 31350060910 North East Link

Hi Peter

Please analyse the below all at standard TAT and please send QC2004 to Eurofins for IWRG621 analysis.

Can you also please include Mark Clough and Kory Auch as recipients for the results.

EM1809231

1. NEL-EF-BH0019_0.2m = IWRG621
2. NEL-EF-BH0019_1.0m = IWRG621
3. RB115 = IWRG621 water equivalent
4. TB115 = Volatile TPH/BTEX
5. FB115 = IWRG621 water equivalent

9233

- 1 1. NEL-BH165_0.2m = IWRG621
- 2 2. NEL-BH165_0.5m = IWRG621
- 3 3. NEL-ENV-BH022_0.2m = IWRG621
- 4 4. NEL-ENV-BH022_0.5m = IWRG621
- 6 5. NEL-ENV-BH022_1.5m = IWRG621
- 7 6. NEL-BH162_0.2m = IWRG621
- 9 7. NEL-BH162_1.0m = IWRG621
- 11 8. RB115 = IWRG621 water equivalent
- 10 9. TB115 = Volatile TPH/BTEX
- 12 10. FB115 = IWRG621 water equivalent

9234

1. NEL-BH138_0.35m = IWRG621
3. NEL-BH138_1.0m = IWRG621
4. NEL-BH138_1.5m = IWRG621
5. NEL-EF-BH016_0.2m = IWRG621
7. NEL-EF-BH016_1.0m = IWRG621
9. NEL-EF-BH017_0.5m = IWRG621
10. NEL-EF-BH017_1.0m = IWRG621
11. NEL-EF-BH017_1.5m = IWRG621
12. QC1004 = IWRG621
13. RB116 = IWRG621 water equivalent
14. TB116 = Volatile TPH/BTEX
15. FB116 = IWRG621 water equivalent

Cheers

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance

GHD
Proudly employee owned

QUALITY CONTROL REPORT

Work Order	: EM1809233	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 07-Jun-2018
Order number	: ----	Date Analysis Commenced	: 13-Jun-2018
C-O-C number	: ----	Issue Date	: 19-Jun-2018
Sampler	: GHD		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 12		
No. of samples analysed	: 10		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1722241)									
EM1809233-001	NEL-BH165_0.2m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	4.7	4.8	2.10	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1722758)									
EM1809233-001	NEL-BH165_0.2m	EA055: Moisture Content	----	0.1	%	12.4	13.0	5.14	0% - 50%
EM1809329-003	Anonymous	EA055: Moisture Content	----	0.1	%	7.8	7.6	2.59	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1723443)									
EM1809092-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	64	66	2.81	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	278	286	3.14	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	133	136	2.54	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	456	470	3.09	0% - 20%
EM1809092-015	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	24	23	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	35	34	3.56	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	28	27	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1723443) - continued									
EM1809092-015	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	79	77	2.09	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1723445)									
EM1809233-003	NEL-ENV-BH022_0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	14	14	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	8	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	18	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	33	32	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	16	16	0.00	No Limit
EM1809239-088	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	15	15	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	8	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	6	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	14	14	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1723442)									
EM1809092-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809092-015	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1723444)									
EM1809233-003	NEL-ENV-BH022_0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809239-088	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1723422)									
EM1809230-067	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809233-002	NEL-BH165_0.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1726921)									
EM1809170-016	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809170-035	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1726922)									
EM1809233-003	NEL-ENV-BH022_0.2m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809345-003	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1722531)									
EM1809230-046	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	200	200	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK040T: Fluoride Total (QC Lot: 1722531) - continued									
EM1809230-086	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	200	210	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1722432)									
EM1809231-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1722246)									
EM1809231-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1722246)									
EM1809231-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1722246)									
EM1809231-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1722430)							
EM1809231-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1722430) - continued									
EM1809231-001	Anonymous	EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1722430)									
EM1809231-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1722430)									
EM1809231-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1722430)									
EM1809231-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

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 Work Order : EM1809233
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1722430) - continued									
EM1809231-001	Anonymous	EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1722246)									
EM1809231-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1722431)									
EM1809231-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1722246)									
EM1809231-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1722431)									
EM1809231-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1725827)									
EM1808885-007	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	9.02	8.38	7.36	0% - 20%
EM1809320-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	9.05	9.10	0.551	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1725904)									
EM1809425-004	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EM1809233-011	RB117	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1725906)									
EM1809320-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.015	0.015	0.00	0% - 50%



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1725906) - continued									
EM1809320-002	Anonymous	EG020A-F: Lead	7439-92-1	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.083	0.081	2.14	0% - 50%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809233-011	RB117	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1725905)									
EM1809425-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1809233-011	RB117	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1727385)									
EM1808885-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809410-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1730275)									
EM1809113-150	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1809323-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.106	0.118	11.0	0% - 20%
EK040P: Fluoride by PC Titrator (QC Lot: 1725828)									
EM1808885-007	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1809320-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.3	1.3	0.00	0% - 50%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1808885-006	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1723557) - continued									
EM1809318-001	Anonymous	EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1808885-006	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1808885-006	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1723557)									
EM1809318-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1808885-006	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1723555)									
EM1809318-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1808885-006	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1723555)									
EM1809318-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1808885-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1723555)									

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 Work Order : EM1809233
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1723555) - continued									
EM1809318-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1808885-006	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1723443)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.3	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	100.0	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	94.3	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	92.7	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	90.5	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	91.2	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	80.2	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	92.0	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	90.4	82	111
EG005T: Total Metals by ICP-AES (QCLot: 1723445)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.4	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	85.8	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	94.6	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	94.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	87.4	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	92.9	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	81.2	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	105	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	92.9	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1723442)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.5	77	104
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1723444)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.3	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1723422)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	77.0	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1726921)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	93.3	80	110
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1726922)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	92.0	80	110
EK040T: Fluoride Total (QCLot: 1722531)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	91.0	77	106



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1722432)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	110	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1722246)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	84.9	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	84.0	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	81.2	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	81.7	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	84.2	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	82.2	74	114
EP074H: Naphthalene (QCLot: 1722246)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	84.4	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1722246)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	85.5	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	75.4	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	89.3	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	80.0	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	85.2	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	85.8	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	80.2	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	75.3	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	92.5	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	83.6	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	87.5	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	77.3	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	86.9	70	119
EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.4	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	77.2	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.3	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	76.8	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	82.4	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	76.0	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1722430)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	89.2	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	92.8	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	108	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	99.0	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	116	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	105	60	126



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1722430) - continued								
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	94.2	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	101	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	69.8	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1722430)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	90.1	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	100	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	92.8	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	92.3	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	114	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	125	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	86.6	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	102	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	114	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	82.4	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1722430)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	95.2	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	96.9	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	113	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	104	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	104	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	67.6	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	102	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	98.1	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	98.7	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	109	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	97.2	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	93.6	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	96.4	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	99.7	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	93.9	55	137
EP075I: Organochlorine Pesticides (QCLot: 1722430)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	109	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	96.6	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	112	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	107	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	97.6	68	133



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075I: Organochlorine Pesticides (QCLot: 1722430) - continued								
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	101	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	97.2	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	100	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	91.7	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	91.9	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	93.5	63	136
EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	102	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	95.4	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	87.6	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	85.4	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	99.9	66	135
EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	110	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	94.5	63	139
EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	112	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	114	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1722246)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	80.2	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1722431)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	107	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	112	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	105	77	116
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1722246)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	79.9	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1722431)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	107	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	110	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	98.9	68	124

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG020F: Dissolved Metals by ICP-MS (QCLot: 1725904)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	109	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1725906)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.3	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	90.4	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.3	82	103



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1725906) - continued								
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	92.6	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	93.7	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.5	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.2	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	94.7	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.3	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1725905)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.3	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1727385)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	108	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1730275)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	92.2	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1725828)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	112	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1724162)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	90.3	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1723557)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	93.3	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1723557)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	72.6	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	82.1	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	106	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	85.4	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	96.7	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	86.2	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	80.8	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	95.6	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	90.5	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	99.2	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	84.8	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	91.3	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	99.5	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	93.4	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1723557)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	94.8	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	96.2	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	96.5	82	112



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074F: Halogenated Aromatic Compounds (QCLot: 1723557) - continued								
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	92.2	62	119
EP074G: Trihalomethanes (QCLot: 1723557)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	96.5	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1724163)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	86.1	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	86.3	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	90.0	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	90.4	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	92.7	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	110	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.2	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	93.2	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	95.4	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	96.3	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	96.3	52	131
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	98.8	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	97.6	56	126
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	96.1	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	95.9	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	97.2	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1724123)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	74.9	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	74.1	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	82.2	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	70.5	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	84.0	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	75.4	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	87.2	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	89.4	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	81.8	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1724123)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	33.6	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	66.4	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	59.6	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	77.7	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	87.2	52	128



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1724123) - continued								
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	84.2	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	24.7	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	68.9	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	82.8	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	107	32	135
EP075I: Organochlorine Pesticides (QCLot: 1724123)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	90.4	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	96.5	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	91.3	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	94.6	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	93.7	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	97.3	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	95.3	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	92.9	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	95.5	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1723555)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	88.5	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1724164)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	73.7	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	76.6	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	74.8	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1723555)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	85.2	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1724164)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	74.3	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	74.8	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	76.3	58	137
EP080: BTEXN (QCLot: 1723555)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	96.7	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.0	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	98.2	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	96.0	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	98.0	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	90.6	74	124

Matrix Spike (MS) Report



The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1723443)							
EM1809092-003	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	79.0	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	84.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	95.1	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	89.4	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	97.0	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	80.3	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	74.5	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	96.7	74	128
EG005T: Total Metals by ICP-AES (QCLot: 1723445)							
EM1809233-004	NEL-ENV-BH022_0.5m	EG005T: Arsenic	7440-38-2	50 mg/kg	95.8	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.1	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	95.9	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	95.1	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	96.9	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	89.4	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	86.7	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	90.7	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1723442)							
EM1809092-003	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	82.4	76	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1723444)							
EM1809233-004	NEL-ENV-BH022_0.5m	EG035T: Mercury	7439-97-6	5 mg/kg	91.9	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1723422)							
EM1809230-068	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	76.0	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1726921)							
EM1809170-020	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	87.1	77	113
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1726922)							
EM1809233-004	NEL-ENV-BH022_0.5m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	91.4	77	113
EK040T: Fluoride Total (QCLot: 1722531)							
EM1809230-052	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	102	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1722432)							
EM1809233-002	NEL-BH165_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	110	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1722246)							
EM1809231-003	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	91.1	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	93.4	56	134

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074I: Volatile Halogenated Compounds (QCLOT: 172246)							
EM1809231-003	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	95.1	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	86.5	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	93.0	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLOT: 1722430)							
EM1809231-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	89.9	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	94.0	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	113	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLOT: 1722430)							
EM1809231-003	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	87.1	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	82.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLOT: 1722430)							
EM1809231-003	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	96.1	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	100	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLOT: 1722246)							
EM1809231-003	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	99.6	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLOT: 1722431)							
EM1809233-001	NEL-BH165_0.2m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	112	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	118	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	111	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLOT: 1722246)							
EM1809231-003	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	97.6	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLOT: 1722431)							
EM1809233-001	NEL-BH165_0.2m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	113	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	116	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	104	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLOT: 1725906)							
EM1809233-011	RB117	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	99.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	89.4	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	87.0	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	94.6	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.6	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	97.8	75	131
EG035F: Dissolved Mercury by FIMS (QCLOT: 1725905)							

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 Work Order : EM1809233
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 1725905) - continued							
EM1809233-012	FB117	EG035F: Mercury	7439-97-6	0.01 mg/L	96.4	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1727385)							
EM1808885-007	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	107	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1730275)							
EM1808885-007	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	90.2	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1725828)							
EM1809231-006	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	115	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1723557)							
EM1808885-007	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	68.0	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	66.6	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1723557)							
EM1808885-007	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	75.4	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1723555)							
EM1808885-007	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	61.2	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1723555)							
EM1808885-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	60.2	44	122
EP080: BTEXN (QCLot: 1723555)							
EM1808885-007	Anonymous	EP080: Benzene	71-43-2	20 µg/L	75.9	68	130
		EP080: Toluene	108-88-3	20 µg/L	77.6	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1809233	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 07-Jun-2018
Site	: ----	Issue Date	: 19-Jun-2018
Sampler	: GHD	No. of samples received	: 12
Order number	:	No. of samples analysed	: 10

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RB117, FB117	----	----	----	14-Jun-2018	06-Jun-2018	8

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	13-Jun-2018	13-Jun-2018	✔	13-Jun-2018	13-Jun-2018	✔



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	----	----	----	13-Jun-2018	20-Jun-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	14-Jun-2018	03-Dec-2018	✓	14-Jun-2018	03-Dec-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	14-Jun-2018	04-Jul-2018	✓	15-Jun-2018	04-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	14-Jun-2018	04-Jul-2018	✓	14-Jun-2018	21-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	14-Jun-2018	20-Jun-2018	✓	15-Jun-2018	28-Jun-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	13-Jun-2018	04-Jul-2018	✓	15-Jun-2018	04-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	13-Jun-2018	23-Jul-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	13-Jun-2018	13-Jun-2018	✓	13-Jun-2018	13-Jun-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	13-Jun-2018	13-Jun-2018	✓	13-Jun-2018	13-Jun-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	13-Jun-2018	13-Jun-2018	✓	13-Jun-2018	13-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	13-Jun-2018	23-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	13-Jun-2018	23-Jul-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	13-Jun-2018	23-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH165_0.2m, NEL-ENV-BH022_0.2m, NEL-ENV-BH022_1.5m, NEL-BH162_1.0m	NEL-BH165_0.5m, NEL-ENV-BH022_0.5m, NEL-BH162_0.2m,	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	13-Jun-2018	23-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)		06-Jun-2018	13-Jun-2018	13-Jun-2018	✔	13-Jun-2018	13-Jun-2018	✔
NEL-BH165_0.2m,	NEL-BH165_0.5m,							
NEL-ENV-BH022_0.2m,	NEL-ENV-BH022_0.5m,							
NEL-ENV-BH022_1.5m,	NEL-BH162_0.2m,							
NEL-BH162_1.0m								
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)		06-Jun-2018	13-Jun-2018	13-Jun-2018	✔	13-Jun-2018	13-Jun-2018	✔
NEL-BH165_0.2m,	NEL-BH165_0.5m,							
NEL-ENV-BH022_0.2m,	NEL-ENV-BH022_0.5m,							
NEL-ENV-BH022_1.5m,	NEL-BH162_0.2m,							
NEL-BH162_1.0m								

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
RB117,	FB117	06-Jun-2018	----	----	----	14-Jun-2018	06-Jun-2018	✗
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)								
RB117,	FB117	06-Jun-2018	----	----	----	15-Jun-2018	03-Dec-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)								
RB117,	FB117	06-Jun-2018	----	----	----	19-Jun-2018	20-Jun-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)								
RB117,	FB117	06-Jun-2018	----	----	----	14-Jun-2018	04-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)								
RB117,	FB117	06-Jun-2018	----	----	----	17-Jun-2018	20-Jun-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)								
RB117,	FB117	06-Jun-2018	----	----	----	14-Jun-2018	04-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)								
RB117,	FB117	06-Jun-2018	13-Jun-2018	13-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)								
RB117,	FB117	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	14-Jun-2018	20-Jun-2018	✓



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB117,	FB117	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	14-Jun-2018	20-Jun-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB117,	FB117	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	14-Jun-2018	20-Jun-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB117,	FB117	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	14-Jun-2018	20-Jun-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB117,	FB117	06-Jun-2018	13-Jun-2018	13-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB117,	FB117	06-Jun-2018	13-Jun-2018	13-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB117,	FB117	06-Jun-2018	13-Jun-2018	13-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB117,	FB117	06-Jun-2018	13-Jun-2018	13-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB117,	FB117	06-Jun-2018	13-Jun-2018	13-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB117, FB117	RB117,	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	14-Jun-2018	20-Jun-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB117,	FB117	06-Jun-2018	13-Jun-2018	13-Jun-2018	✓	14-Jun-2018	23-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB117, FB117	RB117,	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	14-Jun-2018	20-Jun-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) TB117, FB117	RB117,	06-Jun-2018	13-Jun-2018	20-Jun-2018	✓	14-Jun-2018	20-Jun-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	6	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	6	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.

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Work Order : EM1809233
Client : GHD PTY LTD
Project : 31350060910



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : EM1809234 Amendment : 1 Client : GHD PTY LTD Contact : MR DAVID QUINN Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 Telephone : ---- Project : 31350060910 Order number : C-O-C number : ---- Sampler : SH/KA Site : ---- Quote number : ME/124/18 - North East Link No. of samples received : 15 No. of samples analysed : 12	Page : 1 of 19 Laboratory : Environmental Division Melbourne Contact : Shirley LeCornu Address : 4 Westall Rd Springvale VIC Australia 3171 Telephone : +61-3-8549 9630 Date Samples Received : 07-Jun-2018 15:45 Date Analysis Commenced : 09-Jun-2018 Issue Date : 26-Jul-2018 11:02
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Accreditation No. 825
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ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EK040P: EM1809260 #25 Poor matrix spike precision for Fluoride by PC titrator due to sample matrix. Confirmed by re-analysis.
- Amendment (26/07/2018): This report has been amended following changes to the analytical data reported. The quality system is being utilised to resolve this issue. The specific data affected includes sample EM1809234_7 PCB result.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH138_0.35m	NEL-BH138_1.0m	NEL-BH138_1.5m	NEL-EF-BH016_0.2m	NEL-EF-BH016_1.0m
Client sampling date / time					05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809234-001	EM1809234-003	EM1809234-004	EM1809234-005	EM1809234-007
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		5.9	5.9	6.2	6.7	7.3
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.8	17.6	17.3	18.2	19.1
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	11	5	<5	6
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		<5	8	7	9	14
Lead	7439-92-1	5	mg/kg		8	11	13	15	18
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	2
Nickel	7440-02-0	2	mg/kg		7	8	9	7	20
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		18	8	8	16	35
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		130	220	250	200	350
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH138_0.35m	NEL-BH138_1.0m	NEL-BH138_1.5m	NEL-EF-BH016_0.2m	NEL-EF-BH016_1.0m
Client sampling date / time					05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809234-001	EM1809234-003	EM1809234-004	EM1809234-005	EM1809234-007
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH138_0.35m	NEL-BH138_1.0m	NEL-BH138_1.5m	NEL-EF-BH016_0.2m	NEL-EF-BH016_1.0m
Client sampling date / time				05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809234-001	EM1809234-003	EM1809234-004	EM1809234-005	EM1809234-007
				Result	Result	Result	Result	Result

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH138_0.35m	NEL-BH138_1.0m	NEL-BH138_1.5m	NEL-EF-BH016_0.2m	NEL-EF-BH016_1.0m
Client sampling date / time				05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809234-001	EM1809234-003	EM1809234-004	EM1809234-005	EM1809234-007
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH138_0.35m	NEL-BH138_1.0m	NEL-BH138_1.5m	NEL-EF-BH016_0.2m	NEL-EF-BH016_1.0m
Client sampling date / time					05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809234-001	EM1809234-003	EM1809234-004	EM1809234-005	EM1809234-007
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		88.7	97.4	101	87.8	85.7
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		76.6	82.6	80.7	83.6	85.3
Toluene-D8	2037-26-5	0.1	%		68.6	69.6	70.8	74.5	73.8
4-Bromofluorobenzene	460-00-4	0.1	%		72.8	73.7	78.0	75.4	80.8
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		95.6	104	101	103	101
2-Chlorophenol-D4	93951-73-6	0.025	%		78.4	86.1	82.8	85.6	81.3
2,4,6-Tribromophenol	118-79-6	0.025	%		87.6	95.0	86.2	92.6	93.2
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		81.6	88.9	84.5	90.2	87.9
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		79.7	86.1	80.9	89.4	81.6
2-Fluorobiphenyl	321-60-8	0.025	%		100.0	111	106	106	103
Anthracene-d10	1719-06-8	0.025	%		97.7	111	107	105	106
4-Terphenyl-d14	1718-51-0	0.025	%		116	122	127	120	122



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH017_0.5m	NEL-EF-BH017_1.0m	NEL-EF-BH017_1.5m	QC1004	----
Client sampling date / time					05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1809234-009	EM1809234-010	EM1809234-011	EM1809234-012	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.5	7.6	7.4	7.6	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		19.2	20.5	22.8	14.8	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	5	6	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		23	19	41	22	----
Lead	7439-92-1	5	mg/kg		39	43	30	34	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		15	14	5	14	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		76	66	59	68	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	0.1	0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		440	340	210	580	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH017_0.5m	NEL-EF-BH017_1.0m	NEL-EF-BH017_1.5m	QC1004	----
Client sampling date / time					05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1809234-009	EM1809234-010	EM1809234-011	EM1809234-012	-----
					Result	Result	Result	Result	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH017_0.5m	NEL-EF-BH017_1.0m	NEL-EF-BH017_1.5m	QC1004	----
Client sampling date / time					05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1809234-009	EM1809234-010	EM1809234-011	EM1809234-012	-----
					Result	Result	Result	Result	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH017_0.5m	NEL-EF-BH017_1.0m	NEL-EF-BH017_1.5m	QC1004	----
Client sampling date / time					05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1809234-009	EM1809234-010	EM1809234-011	EM1809234-012	-----
					Result	Result	Result	Result	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH017_0.5m	NEL-EF-BH017_1.0m	NEL-EF-BH017_1.5m	QC1004	----
Client sampling date / time					05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1809234-009	EM1809234-010	EM1809234-011	EM1809234-012	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		87.2	92.3	93.0	76.7	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		84.3	79.9	78.9	76.8	----
Toluene-D8	2037-26-5	0.1	%		75.8	64.0	66.8	66.4	----
4-Bromofluorobenzene	460-00-4	0.1	%		82.9	75.0	76.0	66.4	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.025	%		104	94.0	100	88.2	----
2-Chlorophenol-D4	93951-73-6	0.025	%		83.4	71.3	78.6	73.2	----
2,4,6-Tribromophenol	118-79-6	0.025	%		93.8	85.5	95.0	86.2	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.025	%		88.2	85.9	86.7	78.5	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		84.6	99.4	79.5	73.4	----
2-Fluorobiphenyl	321-60-8	0.025	%		105	96.9	102	93.3	----
Anthracene-d10	1719-06-8	0.025	%		104	99.8	103	93.6	----
4-Terphenyl-d14	1718-51-0	0.025	%		124	125	119	108	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB116	TB116	FB116	----	----
Client sampling date / time				05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809234-013	EM1809234-014	EM1809234-015	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	3.61	----	3.31	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	----	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	<0.01	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	<0.005	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	----	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	----	<0.004	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	----	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	----	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	----	<5	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	----	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	----	<5	----	----
Methylene chloride	75-09-2	5	µg/L	<5	----	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	----	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	----	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	----	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	----	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	----	<5	----	----
Trichloroethene	79-01-6	5	µg/L	<5	----	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB116	TB116	FB116	----	----
Client sampling date / time				05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809234-013	EM1809234-014	EM1809234-015	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	----	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	----	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	----	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	----	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	----	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	----	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	----	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	----	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	----	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	----	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	----	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	<2	----	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	<2	----	<2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB116	TB116	FB116	----	----
Client sampling date / time				05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809234-013	EM1809234-014	EM1809234-015	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	----	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	----	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	----	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	----	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	----	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	----	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	----	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	----	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	----	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	----	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	----	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	----	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	----	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	----	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	----	<50	----	----
Dinoseb	88-85-7	50	µg/L	<50	----	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	----	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	----	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	----	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	----	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB116	TB116	FB116	----	----
Client sampling date / time					05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809234-013	EM1809234-014	EM1809234-015	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	----	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	----	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		93.2	----	93.7	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		104	----	95.6	----	----
Toluene-D8	2037-26-5	5	%		98.2	----	89.3	----	----
4-Bromofluorobenzene	460-00-4	5	%		106	----	95.5	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		30.3	----	32.0	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		80.4	----	82.2	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		89.5	----	98.0	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		88.7	----	96.2	----	----
Anthracene-d10	1719-06-8	1.0	%		93.4	----	98.6	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		104	----	109	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB116	TB116	FB116	----	----
Client sampling date / time					05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809234-013	EM1809234-014	EM1809234-015	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates									
Phenol-d6	13127-88-3	0.25	%		29.6	----	32.1	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		75.3	----	81.7	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		72.8	----	85.5	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		83.0	----	92.0	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		83.4	----	90.3	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		78.3	----	87.4	----	----
Anthracene-d10	1719-06-8	0.25	%		81.5	----	94.2	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		91.1	----	104	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		100	88.8	93.4	----	----
Toluene-D8	2037-26-5	2	%		100.0	88.6	91.6	----	----
4-Bromofluorobenzene	460-00-4	2	%		120	106	110	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8987 8000 Facsimile: 613 8987 8111

Page 1 of 1

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale										PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format									
Project North East Link - Contamination		Contact Email David.Quinn@ghd.com		Address: 2 - 4 Westall Rd, Springvale																			
GHD Contact David Quinn		Quote No./GHD Reference ME/124/18		Lab Contact: Shirley LeCornu																			
Standard TAT																							
Sample ID	Date	Time	Composite Sample	Sample Matrix S: Soil W: Water A: Air G: Gas G: Gravel	Preservative	Type J: Jar B: Bag V: Vial G: Glass bottle P: Plastic bottle	Number	Volume (mL)	HOLD	Analyses Required													
1 NEL-BH138 - 0.35m	05/06/18	AM	/	S	/	J	1	250	X														
2 " - 0.6m	"	AM	/	S	/	J	1	250	X														
3 " - 1.0m	"	AM	/	S	/	J	1	250	X														
4 " - 1.5m	"	AM	/	S	/	J	1	250	X														
5 NEL-EF-BH016 - 0.2m	"	PM	/	S	/	J	1	250	X														
6 " - 0.5m	"	PM	/	S	/	J	1	250	X														
7 " - 1.0m	"	PM	/	S	/	J	1	250	X														
8 NEL-EF-BH017 - 0.2m	"	PM	/	S	/	J	1	250	X														
9 " - 0.5m	"	PM	/	S	/	J	1	250	X														
10 " - 1.0m	"	PM	/	S	/	J	1	250	X														
11 " - 1.5m	"	PM	/	S	/	J	1	250	X														
12 QC1004	"	PM	/	S	/	J	1	250	X														
13 QC2004	"	PM	/	S	/	J	1	250	X														
14 FB116	"	PM	/	W	/	VGP	8	/	X														
15 RB116	"	PM	/	W	/	VGP	8	/	X														
16 TB116	"	PM	/	W	/	V	1	/	X														

Forwarded to
RemarksSecondary Lab
Initials *A* Date *9/6*Environmental Division
MelbourneWork Order Reference
EM1809234

Telephone : + 61-3-8549 9800

Sampled by:	Scott Hilliard / Gary Arch	Date/Time:	05/06/18 AM	Relinquished by:	Scott Hilliard	Date/Time:	05/06/18 PM
Received by:	Core shed fidge	Date/Time:	05/06/18 PM	Relinquished by:	Core shed Bridge	Date/Time:	06/06/18 AM
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Arnie (Ar)	Date/Time:	7/6, 1545				
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecon.com) & Nazuha Rosli (nazuha.rosli@aecon.com)						

Peter Ravlic

From: David Quinn <David.Quinn@ghd.com>
Sent: Friday, 8 June 2018 4:51 PM
To: Peter Ravlic
Cc: Mark Clough; Kory.Auch@ghd.com; Robyn Madsen
Subject: RE: ON HOLD - EM1809231 & 9233 & 9234 - GHD 31350060910 North East Link

Hi Peter

Please analyse the below all at standard TAT and please send QC2004 to Eurofins for IWRG621 analysis.

Can you also please include Mark Clough and Kory Auch as recipients for the results.

EM1809231

1. NEL-EF-BH0019_0.2m = IWRG621
2. NEL-EF-BH0019_1.0m = IWRG621
3. RB115 = IWRG621 water equivalent
4. TB115 = Volatile TPH/BTEX
5. FB115 = IWRG621 water equivalent

9233

1. NEL-BH165_0.2m = IWRG621
2. NEL-BH165_0.5m = IWRG621
3. NEL-ENV-BH022_0.2m = IWRG621
4. NEL-ENV-BH022_0.5m = IWRG621
5. NEL-ENV-BH022_1.5m = IWRG621
7. NEL-BH162_0.2m = IWRG621
8. NEL-BH162_1.0m = IWRG621
9. RB115 = IWRG621 water equivalent
10. TB115 = Volatile TPH/BTEX
11. FB115 = IWRG621 water equivalent

9234

1. NEL-BH138_0.35m = IWRG621
3. NEL-BH138_1.0m = IWRG621
4. NEL-BH138_1.5m = IWRG621
5. NEL-EF-BH016_0.2m = IWRG621
7. NEL-EF-BH016_1.0m = IWRG621
9. NEL-EF-BH017_0.5m = IWRG621
10. NEL-EF-BH017_1.0m = IWRG621
11. NEL-EF-BH017_1.5m = IWRG621
12. QC1004 = IWRG621
13. RB116 = IWRG621 water equivalent
14. TB116 = Volatile TPH/BTEX
15. FB116 = IWRG621 water equivalent

Cheers

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance

GHD
Proudly employee owned

QUALITY CONTROL REPORT

Work Order : **EM1809234**

Page : 1 of 20

Amendment : **1**

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **MR DAVID QUINN**

Contact : Shirley LeCornu

Address : **LEVEL 8, 180 LONSDALE ST
MELBOURNE VIC, AUSTRALIA 3001**

Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : ----

Telephone : +61-3-8549 9630

Project : 31350060910

Date Samples Received : 07-Jun-2018

Order number :

Date Analysis Commenced : 09-Jun-2018

C-O-C number : ----

Issue Date : 26-Jul-2018

Sampler : SH/KA

Site : ----

Quote number : ME/124/18 - North East Link

No. of samples received : 15

No. of samples analysed : 12



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1714574)									
EM1809109-004	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	5.4	5.4	0.00	0% - 20%
EM1809234-003	NEL-BH138_1.0m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	5.9	6.0	1.68	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1722779)									
EM1809208-001	Anonymous	EA055: Moisture Content	----	0.1	%	10.0	9.6	3.59	0% - 50%
EM1809234-010	NEL-EF-BH017_1.0m	EA055: Moisture Content	----	0.1	%	20.5	19.5	4.69	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1722544)									
EM1809234-001	NEL-BH138_0.35m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	7	4	63.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	7	14.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	18	<5	112	No Limit
EM1809362-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	74	79	6.59	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	22	11.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1722544) - continued									
EM1809362-001	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	31	33	4.70	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1722543)									
EM1809234-001	NEL-BH138_0.35m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809362-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1722291)									
EM1809129-039	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809214-032	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1722552)									
EM1809129-026	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809208-003	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1722553)									
EM1809234-009	NEL-EF-BH017_0.5m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1718982)									
EM1809025-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	340	350	0.00	No Limit
EM1809234-001	NEL-BH138_0.35m	EK040T: Fluoride	16984-48-8	40	mg/kg	130	160	17.5	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1718144)									
EM1809208-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809234-010	NEL-EF-BH017_1.0m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1714514)									
EM1809208-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809234-010	NEL-EF-BH017_1.0m	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1714514)									
EM1809208-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1809234-010	NEL-EF-BH017_1.0m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1714514)									
EM1809208-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP074I: Volatile Halogenated Compounds (QC Lot: 1714514) - continued											
EM1809208-001	Anonymous	EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit		
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit		
EM1809234-010	NEL-EF-BH017_1.0m	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit		
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit		
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1718142)									
		EM1809234-010	NEL-EF-BH017_1.0m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
EP075-EM: 2.4-Dichlorophenol	120-83-2			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1718142) - continued										
EM1809234-010	NEL-EF-BH017_1.0m	EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit	
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit	
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit	
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit	
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit	
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit	
		0-2								
EM1809208-001	Anonymous	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit	
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit	
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit	
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit	
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit	
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit	
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit	
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit	
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit	
0-2										
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1718142)	EM1809234-010	NEL-EF-BH017_1.0m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
			EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
			EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
			EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
			EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
			EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
			EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
			EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
			EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
	EM1809208-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
			EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
EP075-EM: 3- & 4-Methylphenol			1319-77-3	1	mg/kg	<1	<1	0.00	No Limit	
EP075-EM: 2-Nitrophenol			88-75-5	1	mg/kg	<1	<1	0.00	No Limit	
EP075-EM: 2,4-Dimethylphenol			105-67-9	1	mg/kg	<1	<1	0.00	No Limit	
EP075-EM: 2,4-Dinitrophenol			51-28-5	5	mg/kg	<5	<5	0.00	No Limit	
EP075-EM: 4-Nitrophenol			100-02-7	5	mg/kg	<5	<5	0.00	No Limit	
EP075-EM: 2-Methyl-4,6-dinitrophenol			8071-51-0	5	mg/kg	<5	<5	0.00	No Limit	
EP075-EM: Dinoseb			88-85-7	5	mg/kg	<5	<5	0.00	No Limit	
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit			
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1718142)										



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1718142) - continued									
EM1809234-010	NEL-EF-BH017_1.0m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809208-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1718142)									
EM1809234-010	NEL-EF-BH017_1.0m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1718142) - continued									
EM1809234-010	NEL-EF-BH017_1.0m	EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1809208-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1714514)									
EM1809208-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1809234-010	NEL-EF-BH017_1.0m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1718143)									
EM1809208-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1718143) - continued									
EM1809234-010	NEL-EF-BH017_1.0m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1714514)									
EM1809208-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1809234-010	NEL-EF-BH017_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1718143)									
EM1809208-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809234-010	NEL-EF-BH017_1.0m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1717760)									
EM1809234-013	RB116	EA005-P: pH Value	----	0.01	pH Unit	3.61	2.98	19.1	0% - 20%
EM1809260-012	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.41	7.40	0.135	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1719169)									
EM1809234-013	RB116	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1719172)									
EM1809264-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0002	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	28.1	28.1	0.0220	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.020	0.019	0.00	0% - 50%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.061	0.060	0.00	0% - 20%
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.216	0.218	0.706	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.016	0.016	0.00	0% - 50%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.006	0.006	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809234-013	RB116	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1719172) - continued									
EM1809234-013	RB116	EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1719171)									
EM1809234-013	RB116	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1727385)									
EM1808885-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809410-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1726674)									
EM1809213-003	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1809213-018	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1717761)									
EM1809234-013	RB116	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1809260-012	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	2.2	2.2	0.00	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1718174)									
EM1809218-027	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1718174)									
EM1809218-027	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1718174)									
EM1809218-027	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1718174)									
EM1809218-027	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1718173)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1718173) - continued									
EM1809260-025	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1809218-027	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1718173)									
EM1809260-025	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1809218-027	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1718173)									
EM1809260-025	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1809218-027	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)		
		LCS	Low	High	
Result					
<5	21.7 mg/kg	93.7	79	113	
<1	4.64 mg/kg	88.0	85	109	
<5	32 mg/kg	93.7	78	108	
<5	40 mg/kg	94.0	78	106	
<2	7.9 mg/kg	93.3	86	112	
<2	55 mg/kg	92.8	82	111	
<5	5.37 mg/kg	101	93	109	
<2	2.1 mg/kg	94.0	80	108	
<5	5.2 mg/kg	105	88	116	
<5	60.8 mg/kg	88.4	82	111	
<0.1	2.57 mg/kg	94.2	77	104	
<0.5	40 mg/kg	86.1	75	112	
<1	20 mg/kg	93.6	80	110	
<1	20 mg/kg	91.0	80	110	
<40	400 mg/kg	100	77	106	
<0.1	1 mg/kg	83.0	63	118	
<0.2	2.1 mg/kg	86.6	74	118	
<0.5	2.1 mg/kg	82.0	70	124	
<0.5	2.1 mg/kg	79.6	71	122	
<0.5	4.2 mg/kg	78.7	70	118	
<0.5	2.1 mg/kg	83.6	76	116	
<0.5	2.1 mg/kg	80.6	74	114	
<1	0.6 mg/kg	90.5	77	111	



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1714514) - continued								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	87.7	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	76.7	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	90.9	68	107
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	81.0	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	91.8	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	93.2	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	85.0	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	78.4	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	101	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	84.1	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	92.1	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	79.4	64	124
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	88.6	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	94.0	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	82.2	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.8	73	117
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	87.4	69	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	91.7	75	114
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	79.6	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1718142)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	117	54	122
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	97.6	58	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	109	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	98.1	62	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	109	53	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	97.2	60	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	110	56	118
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5	0.05	mg/kg	<0.05	4 mg/kg	107	54	125
	8-90-2							
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	94.5	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1718142)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	107	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	119	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	105	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	96.3	53	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	110	43	120
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	118	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	89.9	59	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	85.7	47	125



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1718142) - continued								
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	96.8	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	105	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1718142)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	113	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	115	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	112	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	114	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	113	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	75.4	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	114	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	115	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	117	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	122	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	122	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	111	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	128	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	130	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	128	55	137
EP075I: Organochlorine Pesticides (QCLot: 1718142)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	115	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	116	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	114	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	116	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	113	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	113	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	113	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	116	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	117	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	117	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	116	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	119	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	117	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	124	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	76.6	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	119	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	120	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	122	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	118	59	134

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

Sub-Matrix: **WATER**

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1719169)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	95.8	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1719172)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	102	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	100	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	103	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	98.7	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1719171)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	89.2	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1727385)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	108	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1726674)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	90.5	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1717761)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EPK040P: Fluoride by PC Titrator (QCLot: 1717761) - continued								
EPK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	100	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1717805)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	66.5	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1718174)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	99.3	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1718174)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	105	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	101	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	100	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	102	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	100	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	101	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	96.4	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	99.0	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	96.7	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	95.3	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	97.6	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	92.2	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	93.5	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	108	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1718174)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	100	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	103	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	101	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	108	62	119
EP074G: Trihalomethanes (QCLot: 1718174)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	102	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1717806)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	88.9	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	91.5	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	91.0	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	92.8	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	91.0	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	106	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	93.5	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	91.7	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	94.7	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	91.2	55	123



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1717806) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	95.8	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	93.4	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	100	56	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	94.9	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	93.0	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	94.6	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1717808)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	72.4	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	70.2	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	75.3	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	68.7	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	78.1	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	69.1	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	76.6	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5	2	µg/L	<2	20 µg/L	77.0	47	125
	8-90-2							
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	71.2	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1717808)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	29.7	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	66.7	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	61.5	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	69.8	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	83.8	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	99.5	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	27.0	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	62.8	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	72.0	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	93.8	32	135
EP075I: Organochlorine Pesticides (QCLot: 1717808)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	78.5	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	77.2	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	76.0	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	75.6	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	76.5	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	79.5	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	76.6	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	75.6	62	136



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP075I: Organochlorine Pesticides (QCLot: 1717808) - continued								
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	75.6	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1717807)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	96.0	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	97.6	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	96.0	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1718173)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	103	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1717807)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	96.2	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	97.8	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	97.9	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1718173)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	102	66	123
EP080: BTEXN (QCLot: 1718173)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	102	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	107	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	110	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	108	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	107	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	89.4	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
					MS	Low	High
Client sample ID	Method: Compound	CAS Number					
EG005T: Total Metals by ICP-AES (QCLot: 1722544)							
EM1809234-003	NEL-BH138_1.0m	EG005T: Arsenic	7440-38-2	50 mg/kg	94.2	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.7	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	99.9	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	95.9	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	84.6	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	96.0	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	80.7	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	94.1	74	128



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1722543)							
EM1809234-003	NEL-BH138_1.0m	EG035T: Mercury	7439-97-6	5 mg/kg	86.5	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1722291)							
EM1809129-041	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	94.6	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1722552)							
EM1809129-028	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	87.8	77	113
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1722553)							
EM1809234-010	NEL-EF-BH017_1.0m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	91.0	77	113
EK040T: Fluoride Total (QCLot: 1718982)							
EM1809025-012	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	90.5	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1718144)							
EM1809208-006	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	78.2	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1714514)							
EM1809208-003	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	108	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	102	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1714514)							
EM1809208-003	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	111	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	100	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	104	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1718142)							
EM1809208-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	85.4	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	77.2	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	40.7	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1718142)							
EM1809208-003	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	82.0	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	66.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1718142)							
EM1809208-003	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	93.3	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	96.5	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1714514)							
EM1809208-003	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	96.5	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1718143)							
EM1809208-005	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	103	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	106	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	97.5	64	118



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1714514)							
EM1809208-003	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	94.7	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1718143)							
EM1809208-005	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	103	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	103	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	94.6	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1719172)							
EM1809234-013	RB116	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	91.4	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	90.6	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	91.0	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.6	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	92.0	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	91.8	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1719171)							
EM1809234-015	FB116	EG035F: Mercury	7439-97-6	0.01 mg/L	88.1	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1727385)							
EM1808885-007	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	107	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1726674)							
EM1809159-003	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	88.5	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1717761)							
EM1809234-015	FB116	EK040P: Fluoride	16984-48-8	5 mg/L	103	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1718174)							
EM1809234-013	RB116	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	98.1	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	81.6	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1718174)							
EM1809234-013	RB116	EP074: Chlorobenzene	108-90-7	20 µg/L	85.9	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1718173)							
EM1809234-013	RB116	EP080: C6 - C9 Fraction	----	280 µg/L	91.0	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1718173)							
EM1809234-013	RB116	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	87.0	44	122
EP080: BTEXN (QCLot: 1718173)							
EM1809234-013	RB116	EP080: Benzene	71-43-2	20 µg/L	99.4	68	130
		EP080: Toluene	108-88-3	20 µg/L	98.2	72	132

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Work Order : EM1809234 Amendment 1
Client : GHD PTY LTD
Project : 31350060910



QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1809234**

Page : 1 of 14

Amendment : **1**

Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Project : **31350060910**
Site : **----**
Sampler : **SH/KA**
Order number :

Laboratory : **Environmental Division Melbourne**
Telephone : **+61-3-8549 9630**
Date Samples Received : **07-Jun-2018**
Issue Date : **26-Jul-2018**
No. of samples received : **15**
No. of samples analysed : **12**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
RB116, FB116	----	----	----	12-Jun-2018	05-Jun-2018	7

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	8	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	12	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	8	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	12	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)		05-Jun-2018	12-Jun-2018	12-Jun-2018	✔	12-Jun-2018	12-Jun-2018	✔
NEL-BH138_0.35m, NEL-BH138_1.0m,								
NEL-BH138_1.5m, NEL-EF-BH016_0.2m,								
NEL-EF-BH016_1.0m, NEL-EF-BH017_0.5m,								
NEL-EF-BH017_1.0m, NEL-EF-BH017_1.5m,								
QC1004								



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	----	----	----	13-Jun-2018	19-Jun-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	13-Jun-2018	02-Dec-2018	✓	14-Jun-2018	02-Dec-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	13-Jun-2018	03-Jul-2018	✓	14-Jun-2018	03-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	13-Jun-2018	03-Jul-2018	✓	13-Jun-2018	20-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	13-Jun-2018	19-Jun-2018	✓	14-Jun-2018	27-Jun-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	12-Jun-2018	03-Jul-2018	✓	14-Jun-2018	03-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)								
NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	12-Jun-2018	19-Jun-2018	✔	13-Jun-2018	22-Jul-2018	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	09-Jun-2018	12-Jun-2018	✔	09-Jun-2018	12-Jun-2018	✔
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	09-Jun-2018	12-Jun-2018	✔	09-Jun-2018	12-Jun-2018	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	09-Jun-2018	12-Jun-2018	✔	09-Jun-2018	12-Jun-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	12-Jun-2018	19-Jun-2018	✔	13-Jun-2018	22-Jul-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH138_0.35m, NEL-BH138_1.5m, NEL-EF-BH016_1.0m, NEL-EF-BH017_1.0m, QC1004	NEL-BH138_1.0m, NEL-EF-BH016_0.2m, NEL-EF-BH017_0.5m, NEL-EF-BH017_1.5m,	05-Jun-2018	12-Jun-2018	19-Jun-2018	✔	13-Jun-2018	22-Jul-2018	✔



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)		05-Jun-2018	12-Jun-2018	19-Jun-2018	✓	13-Jun-2018	22-Jul-2018	✓
NEL-BH138_0.35m,	NEL-BH138_1.0m,							
NEL-BH138_1.5m,	NEL-EF-BH016_0.2m,							
NEL-EF-BH016_1.0m,	NEL-EF-BH017_0.5m,							
NEL-EF-BH017_1.0m,	NEL-EF-BH017_1.5m,							
QC1004								
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)		05-Jun-2018	12-Jun-2018	19-Jun-2018	✓	13-Jun-2018	22-Jul-2018	✓
NEL-BH138_0.35m,	NEL-BH138_1.0m,							
NEL-BH138_1.5m,	NEL-EF-BH016_0.2m,							
NEL-EF-BH016_1.0m,	NEL-EF-BH017_0.5m,							
NEL-EF-BH017_1.0m,	NEL-EF-BH017_1.5m,							
QC1004								
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)		05-Jun-2018	09-Jun-2018	12-Jun-2018	✓	09-Jun-2018	12-Jun-2018	✓
NEL-BH138_0.35m,	NEL-BH138_1.0m,							
NEL-BH138_1.5m,	NEL-EF-BH016_0.2m,							
NEL-EF-BH016_1.0m,	NEL-EF-BH017_0.5m,							
NEL-EF-BH017_1.0m,	NEL-EF-BH017_1.5m,							
QC1004								
Soil Glass Jar - Unpreserved (EP071-EM)		05-Jun-2018	12-Jun-2018	19-Jun-2018	✓	13-Jun-2018	22-Jul-2018	✓
NEL-BH138_0.35m,	NEL-BH138_1.0m,							
NEL-BH138_1.5m,	NEL-EF-BH016_0.2m,							
NEL-EF-BH016_1.0m,	NEL-EF-BH017_0.5m,							
NEL-EF-BH017_1.0m,	NEL-EF-BH017_1.5m,							
QC1004								
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)		05-Jun-2018	09-Jun-2018	12-Jun-2018	✓	09-Jun-2018	12-Jun-2018	✓
NEL-BH138_0.35m,	NEL-BH138_1.0m,							
NEL-BH138_1.5m,	NEL-EF-BH016_0.2m,							
NEL-EF-BH016_1.0m,	NEL-EF-BH017_0.5m,							
NEL-EF-BH017_1.0m,	NEL-EF-BH017_1.5m,							
QC1004								
Soil Glass Jar - Unpreserved (EP071-EM)		05-Jun-2018	12-Jun-2018	19-Jun-2018	✓	13-Jun-2018	22-Jul-2018	✓
NEL-BH138_0.35m,	NEL-BH138_1.0m,							
NEL-BH138_1.5m,	NEL-EF-BH016_0.2m,							
NEL-EF-BH016_1.0m,	NEL-EF-BH017_0.5m,							
NEL-EF-BH017_1.0m,	NEL-EF-BH017_1.5m,							
QC1004								

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	FB116	05-Jun-2018	----	----	----	12-Jun-2018	05-Jun-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)	FB116	05-Jun-2018	----	----	----	13-Jun-2018	02-Dec-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)	FB116	05-Jun-2018	----	----	----	18-Jun-2018	19-Jun-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	FB116	05-Jun-2018	----	----	----	14-Jun-2018	03-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)	FB116	05-Jun-2018	----	----	----	14-Jun-2018	19-Jun-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	FB116	05-Jun-2018	----	----	----	12-Jun-2018	03-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)	FB116	05-Jun-2018	12-Jun-2018	12-Jun-2018	✓	13-Jun-2018	22-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)	FB116	05-Jun-2018	12-Jun-2018	19-Jun-2018	✓	13-Jun-2018	19-Jun-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB116	05-Jun-2018	12-Jun-2018	19-Jun-2018	✓	13-Jun-2018	19-Jun-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB116	05-Jun-2018	12-Jun-2018	19-Jun-2018	✓	13-Jun-2018	19-Jun-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)	FB116	05-Jun-2018	12-Jun-2018	19-Jun-2018	✓	13-Jun-2018	19-Jun-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))	FB116	05-Jun-2018	12-Jun-2018	12-Jun-2018	✓	13-Jun-2018	22-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)	FB116	05-Jun-2018	12-Jun-2018	12-Jun-2018	✓	13-Jun-2018	22-Jul-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) RB116, FB116	05-Jun-2018	12-Jun-2018	12-Jun-2018	✓	13-Jun-2018	22-Jul-2018	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075-EM) RB116, FB116	05-Jun-2018	12-Jun-2018	12-Jun-2018	✓	13-Jun-2018	22-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) RB116, FB116	05-Jun-2018	12-Jun-2018	12-Jun-2018	✓	13-Jun-2018	22-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB116, TB116, FB116	05-Jun-2018	12-Jun-2018	19-Jun-2018	✓	13-Jun-2018	19-Jun-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) RB116, FB116	05-Jun-2018	12-Jun-2018	12-Jun-2018	✓	13-Jun-2018	22-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB116, TB116, FB116	05-Jun-2018	12-Jun-2018	19-Jun-2018	✓	13-Jun-2018	19-Jun-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) RB116, TB116, FB116	05-Jun-2018	12-Jun-2018	19-Jun-2018	✓	13-Jun-2018	19-Jun-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **✖** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	3	27	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	12	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	8	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	12	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Certificate of Analysis

GHD Melbourne
Level 8, 180 Lonsdale St
Melbourne
VIC 3000



NATA Accredited
Accreditation Number 1261
Site Number 1254

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The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: David Quinn

Report 602618-S
Project name NORTH EAST LINK - CONTAMINATION
Project ID 31/35006/0910
Received Date Jun 12, 2018

Client Sample ID			QC2004
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Jn13331
Date Sampled			Jun 05, 2018
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	55
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	55
Volatile Organics			
1.1-Dichloroethane	0.5	mg/kg	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5
Allyl chloride	0.5	mg/kg	< 0.5
Benzene	0.1	mg/kg	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5
Bromochloromethane	0.5	mg/kg	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5
Bromoform	0.5	mg/kg	< 0.5
Bromomethane	0.5	mg/kg	< 0.5

Client Sample ID			QC2004
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Jn13331
Date Sampled			Jun 05, 2018
Test/Reference	LOR	Unit	
Volatile Organics			
Carbon disulfide	0.5	mg/kg	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5
Chloroethane	0.5	mg/kg	< 0.5
Chloroform	0.5	mg/kg	< 0.5
Chloromethane	0.5	mg/kg	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1
Iodomethane	0.5	mg/kg	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5
o-Xylene	0.1	mg/kg	< 0.1
Styrene	0.5	mg/kg	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5
Toluene	0.1	mg/kg	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5
Xylenes - Total	0.3	mg/kg	< 0.3
Total MAH*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5
4-Bromofluorobenzene (surr.)	1	%	107
Toluene-d8 (surr.)	1	%	88
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5

Client Sample ID			QC2004
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Jn13331
Date Sampled			Jun 05, 2018
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	102
p-Terphenyl-d14 (surr.)	1	%	114
Organochlorine Pesticides			
Chlordanes - Total	0.1	mg/kg	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05
a-BHC	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-BHC	0.05	mg/kg	< 0.05
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05
Toxaphene	1	mg/kg	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	83
Tetrachloro-m-xylene (surr.)	1	%	79
Polychlorinated Biphenyls			
Aroclor-1016	0.1	mg/kg	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1

Client Sample ID			QC2004
Sample Matrix			Soil
Eurofins mgt Sample No.			M18-Jn13331
Date Sampled			Jun 05, 2018
Test/Reference	LOR	Unit	
Polychlorinated Biphenyls			
Total PCB*	0.1	mg/kg	< 0.1
Dibutylchloroendate (surr.)	1	%	83
Tetrachloro-m-xylene (surr.)	1	%	79
Phenols (Halogenated)			
2-Chlorophenol	0.5	mg/kg	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	< 1
2,4,6-Trichlorophenol	1.0	mg/kg	< 1
2,6-Dichlorophenol	0.5	mg/kg	< 0.5
4-Chloro-3-methylphenol	1.0	mg/kg	< 1
Pentachlorophenol	1.0	mg/kg	< 1
Tetrachlorophenols - Total	1.0	mg/kg	< 1
Total Halogenated Phenol*	1	mg/kg	< 1
Phenols (non-Halogenated)			
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	< 20
2-Methyl-4,6-dinitrophenol	5	mg/kg	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2
2-Nitrophenol	1.0	mg/kg	< 1
2,4-Dimethylphenol	0.5	mg/kg	< 0.5
2,4-Dinitrophenol	5	mg/kg	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4
4-Nitrophenol	5	mg/kg	< 5
Dinoseb	20	mg/kg	< 20
Phenol	0.5	mg/kg	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20
Phenol-d6 (surr.)	1	%	98
Chromium (hexavalent)	1	mg/kg	< 1
Cyanide (total)	5	mg/kg	< 5
Fluoride	100	mg/kg	430
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	8.3
% Moisture	1	%	15
Heavy Metals			
Arsenic	2	mg/kg	4.0
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	31
Copper	5	mg/kg	28
Lead	5	mg/kg	59
Mercury	0.1	mg/kg	< 0.1
Molybdenum	5	mg/kg	< 5
Nickel	5	mg/kg	18
Selenium	2	mg/kg	< 2
Silver	0.2	mg/kg	< 0.2
Tin	10	mg/kg	< 10
Zinc	5	mg/kg	91

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Vic EPA IWRG 621 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Jun 14, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
Volatile Organics	Melbourne	Jun 14, 2018	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 14, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 14, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Jun 14, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	Jun 14, 2018	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Melbourne	Jun 14, 2018	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Phenols (Halogenated)	Melbourne	Jun 14, 2018	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Jun 14, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Chromium (hexavalent)	Melbourne	Jun 14, 2018	28 Day
- Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)			
Cyanide (total)	Melbourne	Jun 14, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride	Melbourne	Jun 15, 2018	28 Day
- Method: LTM-INO-4150 Determination of Total Fluoride PART A – CIC			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	Jun 14, 2018	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Metals IWRG 621 : Metals M12	Melbourne	Jun 14, 2018	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	Jun 13, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name: GHD Pty Ltd VIC
Address: Level 8, 180 Lonsdale St
Melbourne
VIC 3000

Project Name: NORTH EAST LINK - CONTAMINATION
Project ID: 31/35006/0910

Order No.:
Report #: 602618
Phone: 8687 8000
Fax: 8687 8111

Received: Jun 12, 2018 3:38 PM
Due: Jun 19, 2018
Priority: 5 Day
Contact Name: David Quinn

Eurofins | mgt Analytical Services Manager : Mary Makarios

Sample Detail						Moisture Set	Vic EPA IW/RG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	QC2004	Jun 05, 2018		Soil	M18-Jn13331	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5			0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5			0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5			0.5	Pass	
Allyl chloride	mg/kg	< 0.5			0.5	Pass	
Benzene	mg/kg	< 0.1			0.1	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromochloromethane	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dibromomethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
trans-1,2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1,3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4,5-Trichlorophenol	mg/kg	< 1			1	Pass	
2,4,6-Trichlorophenol	mg/kg	< 1			1.0	Pass	
2,6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1.0	Pass	
Pentachlorophenol	mg/kg	< 1			1.0	Pass	
Tetrachlorophenols - Total	mg/kg	< 1			1.0	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4,6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2,4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Fluoride	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Molybdenum	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 0.2			0.2	Pass	
Tin	mg/kg	< 10			10	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	101			70-130	Pass	
TRH C10-C14	%	70			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	76			70-130	Pass	
1.1.1-Trichloroethane	%	83			70-130	Pass	
1.2-Dichlorobenzene	%	118			70-130	Pass	
1.2-Dichloroethane	%	110			70-130	Pass	
Benzene	%	92			70-130	Pass	
Ethylbenzene	%	109			70-130	Pass	
m&p-Xylenes	%	106			70-130	Pass	
Toluene	%	92			70-130	Pass	
Trichloroethene	%	90			70-130	Pass	
Xylenes - Total	%	106			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	77			70-130	Pass	
TRH C6-C10	%	95			70-130	Pass	
TRH >C10-C16	%	71			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	79			70-130	Pass	
Acenaphthylene	%	87			70-130	Pass	
Anthracene	%	97			70-130	Pass	
Benz(a)anthracene	%	82			70-130	Pass	
Benzo(a)pyrene	%	80			70-130	Pass	
Benzo(b&j)fluoranthene	%	82			70-130	Pass	
Benzo(g,h,i)perylene	%	88			70-130	Pass	
Benzo(k)fluoranthene	%	92			70-130	Pass	
Chrysene	%	99			70-130	Pass	
Dibenz(a,h)anthracene	%	72			70-130	Pass	
Fluoranthene	%	105			70-130	Pass	
Fluorene	%	91			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	75			70-130	Pass	
Naphthalene	%	85			70-130	Pass	
Phenanthrene	%	74			70-130	Pass	
Pyrene	%	105			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	115			70-130	Pass	
4,4'-DDE	%	94			70-130	Pass	
4,4'-DDT	%	86			70-130	Pass	
a-BHC	%	96			70-130	Pass	
Aldrin	%	102			70-130	Pass	
b-BHC	%	99			70-130	Pass	
d-BHC	%	102			70-130	Pass	
Dieldrin	%	102			70-130	Pass	
Endosulfan I	%	113			70-130	Pass	
Endosulfan II	%	84			70-130	Pass	
Endosulfan sulphate	%	94			70-130	Pass	
Endrin	%	106			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde			%	92			70-130	Pass	
Endrin ketone			%	102			70-130	Pass	
g-BHC (Lindane)			%	99			70-130	Pass	
Heptachlor			%	96			70-130	Pass	
Heptachlor epoxide			%	103			70-130	Pass	
Hexachlorobenzene			%	94			70-130	Pass	
Methoxychlor			%	116			70-130	Pass	
LCS - % Recovery									
Polychlorinated Biphenyls									
Aroclor-1260			%	98			70-130	Pass	
LCS - % Recovery									
Phenols (Halogenated)									
2-Chlorophenol			%	93			30-130	Pass	
2,4-Dichlorophenol			%	65			30-130	Pass	
2,4,5-Trichlorophenol			%	103			30-130	Pass	
2,4,6-Trichlorophenol			%	73			30-130	Pass	
2,6-Dichlorophenol			%	116			30-130	Pass	
4-Chloro-3-methylphenol			%	82			30-130	Pass	
Pentachlorophenol			%	34			30-130	Pass	
Tetrachlorophenols - Total			%	63			30-130	Pass	
LCS - % Recovery									
Phenols (non-Halogenated)									
2-Methyl-4,6-dinitrophenol			%	37			30-130	Pass	
2-Methylphenol (o-Cresol)			%	62			30-130	Pass	
2-Nitrophenol			%	30			30-130	Pass	
2,4-Dimethylphenol			%	91			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)			%	79			30-130	Pass	
4-Nitrophenol			%	60			30-130	Pass	
Dinoseb			%	36			30-130	Pass	
Phenol			%	93			30-130	Pass	
LCS - % Recovery									
Chromium (hexavalent)			%	94			70-130	Pass	
Cyanide (total)			%	99			70-130	Pass	
Fluoride			%	94			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	91			80-120	Pass	
Cadmium			%	90			80-120	Pass	
Chromium			%	101			80-120	Pass	
Copper			%	93			80-120	Pass	
Lead			%	102			80-120	Pass	
Mercury			%	109			75-125	Pass	
Molybdenum			%	90			80-120	Pass	
Nickel			%	91			80-120	Pass	
Selenium			%	87			80-120	Pass	
Silver			%	91			80-120	Pass	
Tin			%	93			80-120	Pass	
Zinc			%	95			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M18-Jn13354	NCP	%	85			70-130	Pass	
TRH C10-C14	M18-Jn12549	NCP	%	87			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Volatile Organics				Result 1					
1.1.1-Trichloroethane	M18-Jn13354	NCP	%	76			70-130	Pass	
1.2-Dichlorobenzene	M18-Jn13354	NCP	%	89			70-130	Pass	
1.2-Dichloroethane	M18-Jn13354	NCP	%	98			70-130	Pass	
Benzene	M18-Jn13354	NCP	%	79			70-130	Pass	
Ethylbenzene	M18-Jn13354	NCP	%	87			70-130	Pass	
m&p-Xylenes	M18-Jn13354	NCP	%	84			70-130	Pass	
o-Xylene	M18-Jn13354	NCP	%	84			70-130	Pass	
Toluene	M18-Jn13354	NCP	%	89			70-130	Pass	
Trichloroethene	M18-Jn13354	NCP	%	80			70-130	Pass	
Xylenes - Total	M18-Jn13354	NCP	%	84			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M18-Jn13073	NCP	%	78			70-130	Pass	
TRH C6-C10	M18-Jn13354	NCP	%	81			70-130	Pass	
TRH >C10-C16	M18-Jn12549	NCP	%	83			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M18-Jn12867	NCP	%	75			70-130	Pass	
Acenaphthylene	M18-Jn12867	NCP	%	81			70-130	Pass	
Anthracene	M18-Jn12867	NCP	%	94			70-130	Pass	
Benz(a)anthracene	M18-Jn12867	NCP	%	71			70-130	Pass	
Benzo(a)pyrene	M18-Jn12867	NCP	%	74			70-130	Pass	
Benzo(b&j)fluoranthene	M18-Jn12867	NCP	%	71			70-130	Pass	
Benzo(g,h,i)perylene	M18-Jn12867	NCP	%	73			70-130	Pass	
Benzo(k)fluoranthene	M18-Jn12867	NCP	%	77			70-130	Pass	
Chrysene	M18-Jn12867	NCP	%	97			70-130	Pass	
Dibenz(a,h)anthracene	M18-Jn12867	NCP	%	72			70-130	Pass	
Fluoranthene	M18-Jn12867	NCP	%	112			70-130	Pass	
Fluorene	M18-Jn12867	NCP	%	84			70-130	Pass	
Indeno(1,2,3-cd)pyrene	M18-Jn12867	NCP	%	76			70-130	Pass	
Naphthalene	M18-Jn12867	NCP	%	78			70-130	Pass	
Phenanthrene	M18-Jn12867	NCP	%	78			70-130	Pass	
Pyrene	M18-Jn12867	NCP	%	107			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4,4'-DDD	M18-Jn15896	NCP	%	96			70-130	Pass	
4,4'-DDE	M18-Jn15896	NCP	%	83			70-130	Pass	
4,4'-DDT	M18-Jn15896	NCP	%	81			70-130	Pass	
a-BHC	M18-Jn15896	NCP	%	96			70-130	Pass	
Aldrin	M18-Jn15896	NCP	%	116			70-130	Pass	
b-BHC	M18-Jn15896	NCP	%	79			70-130	Pass	
d-BHC	M18-Jn15896	NCP	%	91			70-130	Pass	
Dieldrin	M18-Jn15896	NCP	%	111			70-130	Pass	
Endosulfan I	M18-Jn15896	NCP	%	114			70-130	Pass	
Endosulfan II	M18-Jn15896	NCP	%	111			70-130	Pass	
Endosulfan sulphate	M18-Jn15896	NCP	%	102			70-130	Pass	
Endrin	M18-Jn15896	NCP	%	104			70-130	Pass	
Endrin aldehyde	M18-Jn15896	NCP	%	113			70-130	Pass	
Endrin ketone	M18-Jn15896	NCP	%	108			70-130	Pass	
g-BHC (Lindane)	M18-Jn15896	NCP	%	93			70-130	Pass	
Heptachlor	M18-Jn15896	NCP	%	101			70-130	Pass	
Heptachlor epoxide	M18-Jn15896	NCP	%	100			70-130	Pass	
Hexachlorobenzene	M18-Jn15896	NCP	%	89			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methoxychlor	M18-Jn15896	NCP	%	118			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	B18-Jn11359	NCP	%	84			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	M18-Jn12867	NCP	%	78			30-130	Pass	
2,4-Dichlorophenol	M18-Jn12867	NCP	%	76			30-130	Pass	
2,4,5-Trichlorophenol	M18-Jn12867	NCP	%	97			30-130	Pass	
2,4,6-Trichlorophenol	M18-Jn12867	NCP	%	68			30-130	Pass	
2,6-Dichlorophenol	M18-Jn12867	NCP	%	82			30-130	Pass	
4-Chloro-3-methylphenol	M18-Jn12867	NCP	%	68			30-130	Pass	
Pentachlorophenol	M18-Jn12867	NCP	%	39			30-130	Pass	
Tetrachlorophenols - Total	M18-Jn12867	NCP	%	59			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Cyclohexyl-4,6-dinitrophenol	M18-Jn10660	NCP	%	34			30-130	Pass	
2-Methyl-4,6-dinitrophenol	M18-Jn10660	NCP	%	48			30-130	Pass	
2-Methylphenol (o-Cresol)	M18-Jn12867	NCP	%	52			30-130	Pass	
2-Nitrophenol	M18-Jn11657	NCP	%	31			30-130	Pass	
2,4-Dimethylphenol	M18-Jn12867	NCP	%	73			30-130	Pass	
2,4-Dinitrophenol	M18-Jn10660	NCP	%	28			30-130	Fail	Q08
3&4-Methylphenol (m&p-Cresol)	M18-Jn12867	NCP	%	68			30-130	Pass	
4-Nitrophenol	M18-Jn12275	NCP	%	57			30-130	Pass	
Dinoseb	M18-Jn12275	NCP	%	45			30-130	Pass	
Phenol	M18-Jn12867	NCP	%	83			30-130	Pass	
Spike - % Recovery									
				Result 1					
Chromium (hexavalent)	M18-Jn15730	NCP	%	101			70-130	Pass	
Cyanide (total)	B18-Jn11343	NCP	%	62			70-130	Fail	Q08
Fluoride	M18-Jn12278	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M18-Jn10865	NCP	%	106			75-125	Pass	
Cadmium	M18-Jn10865	NCP	%	108			75-125	Pass	
Chromium	M18-Jn10865	NCP	%	123			75-125	Pass	
Copper	M18-Jn10865	NCP	%	117			75-125	Pass	
Lead	M18-Jn10865	NCP	%	118			75-125	Pass	
Mercury	M18-Jn10865	NCP	%	113			70-130	Pass	
Molybdenum	M18-Jn10865	NCP	%	111			75-125	Pass	
Nickel	M18-Jn10865	NCP	%	114			75-125	Pass	
Selenium	M18-Jn10865	NCP	%	98			75-125	Pass	
Silver	M18-Jn10865	NCP	%	106			75-125	Pass	
Zinc	M18-Jn10865	NCP	%	112			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M18-Jn13296	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M18-Jn12548	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M18-Jn12548	NCP	mg/kg	83	58	35	30%	Fail	Q15
TRH C29-C36	M18-Jn12548	NCP	mg/kg	< 50	< 50	<1	30%	Pass	

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
1.1-Dichloroethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.4-Trichlorobenzene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Hexachlorobutadiene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1-Dichloroethene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1-Trichloroethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1.2-Tetrachloroethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2-Trichloroethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2.2-Tetrachloroethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dibromoethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichlorobenzene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloroethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloropropane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.3-Trichloropropane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.4-Trimethylbenzene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichlorobenzene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichloropropane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3.5-Trimethylbenzene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.4-Dichlorobenzene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Butanone (MEK)	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Propanone (Acetone)	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chlorotoluene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Methyl-2-pentanone (MIBK)	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Allyl chloride	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzene	M18-Jn13296	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Bromobenzene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromochloromethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromodichloromethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromoform	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromomethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon disulfide	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon Tetrachloride	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chlorobenzene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroform	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloromethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.2-Dichloroethene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.3-Dichloropropene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromochloromethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromomethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dichlorodifluoromethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Ethylbenzene	M18-Jn13296	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Iodomethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Isopropyl benzene (Cumene)	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
m&p-Xylenes	M18-Jn13296	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methylene Chloride	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
o-Xylene	M18-Jn13296	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Styrene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Tetrachloroethene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Toluene	M18-Jn13296	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
trans-1.2-Dichloroethene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
trans-1.3-Dichloropropene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichloroethene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichlorofluoromethane	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Vinyl chloride	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Xylenes - Total	M18-Jn13296	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M18-Jn13296	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	M18-Jn13296	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	M18-Jn12548	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	M18-Jn12548	NCP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	M18-Jn12548	NCP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	M18-Jn15895	NCP	mg/kg	0.2	0.2	10	30%	Pass
4,4'-DDD	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	M18-Jn15895	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Toxaphene	M18-Jn15895	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	M18-Jn15895	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1221	M18-Jn15895	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	M18-Jn15895	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1242	M18-Jn15895	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1248	M18-Jn15895	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1254	M18-Jn15895	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass

Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1260	M18-Jn15895	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Total PCB*	M18-Jn15895	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	M18-Jn11656	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	M18-Jn11656	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	M18-Jn11656	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	M18-Jn11656	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	M18-Jn11656	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	M18-Jn11656	NCP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	M18-Jn11656	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	M18-Jn11656	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
2-Nitrophenol	M18-Jn11656	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dinitrophenol	M18-Jn11656	NCP	mg/kg	< 5	< 5	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M18-Jn11656	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	M18-Jn11656	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	M18-Jn11656	NCP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	M18-Jn11656	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M18-Jn12015	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Cyanide (total)	M18-Jn14794	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Fluoride	M18-Jn12748	NCP	mg/kg	< 100	< 100	<1	30%	Pass
pH (1:5 Aqueous extract at 25°C as rec.)	M18-Jn14957	NCP	pH Units	9.3	9.2	pass	30%	Pass
% Moisture	M18-Jn14791	NCP	%	6.6	6.7	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M18-Jn10569	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Cadmium	M18-Jn10569	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M18-Jn10569	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Copper	M18-Jn10569	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	M18-Jn10569	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Mercury	M18-Jn10569	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Molybdenum	M18-Jn10569	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Nickel	M18-Jn10569	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Selenium	M18-Jn10569	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M18-Jn10569	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tin	M18-Jn10569	NCP	mg/kg	13	14	4.0	30%	Pass
Zinc	M18-Jn10569	NCP	mg/kg	320	330	3.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Mary Makarios	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Michael Brancati	Senior Analyst-Inorganic (VIC)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EM1809532**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **GHD**
Site : **North East Link**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **22**
No. of samples analysed : **14**

Page : 1 of 24
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 14-Jun-2018 10:45
Date Analysis Commenced : 19-Jun-2018
Issue Date : 25-Jun-2018 13:53



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH161_0.2m	NEL-BH161_0.5m	NEL-BH224_0.2m	NEL-BH224_0.5m	NEL-BH223_0.2m
Client sampling date / time					13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809532-001	EM1809532-002	EM1809532-005	EM1809532-006	EM1809532-008
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		4.8	5.0	4.9	5.7	4.3
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		9.0	24.2	10.2	21.7	8.4
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	7	<5	5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		5	17	<5	18	<5
Lead	7439-92-1	5	mg/kg		18	15	8	16	7
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		4	17	4	23	4
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		7	17	6	18	5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.3	0.5	<0.1	0.3	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		230	530	110	520	140
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH161_0.2m	NEL-BH161_0.5m	NEL-BH224_0.2m	NEL-BH224_0.5m	NEL-BH223_0.2m
Client sampling date / time					13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809532-001	EM1809532-002	EM1809532-005	EM1809532-006	EM1809532-008
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH161_0.2m	NEL-BH161_0.5m	NEL-BH224_0.2m	NEL-BH224_0.5m	NEL-BH223_0.2m
Client sampling date / time				13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809532-001	EM1809532-002	EM1809532-005	EM1809532-006	EM1809532-008
				Result	Result	Result	Result	Result

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH161_0.2m	NEL-BH161_0.5m	NEL-BH224_0.2m	NEL-BH224_0.5m	NEL-BH223_0.2m
Client sampling date / time				13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809532-001	EM1809532-002	EM1809532-005	EM1809532-006	EM1809532-008
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH161_0.2m	NEL-BH161_0.5m	NEL-BH224_0.2m	NEL-BH224_0.5m	NEL-BH223_0.2m
Client sampling date / time					13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809532-001	EM1809532-002	EM1809532-005	EM1809532-006	EM1809532-008
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		117	104	102	90.6	95.7
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		81.1	70.2	82.4	79.1	84.8
Toluene-D8	2037-26-5	0.1	%		76.3	63.3	78.5	69.0	76.4
4-Bromofluorobenzene	460-00-4	0.1	%		72.8	63.9	73.2	72.1	72.7
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		109	104	100	86.6	86.3
2-Chlorophenol-D4	93951-73-6	0.025	%		89.4	84.6	84.5	69.4	74.5
2,4,6-Tribromophenol	118-79-6	0.025	%		94.1	93.8	95.8	73.8	84.6
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		95.5	98.3	96.4	79.7	82.6
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		93.0	93.9	93.1	77.4	79.5
2-Fluorobiphenyl	321-60-8	0.025	%		100	102	102	86.2	89.5
Anthracene-d10	1719-06-8	0.025	%		106	110	106	93.9	95.4
4-Terphenyl-d14	1718-51-0	0.025	%		129	123	122	110	113



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH223_0.5m	NEL-BH163_0.2m	NEL-BH163_1.0m	NEL-BH164_0.2m	NEL-BH164_0.5m
Client sampling date / time					13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809532-009	EM1809532-012	EM1809532-014	EM1809532-015	EM1809532-016
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		4.5	4.9	5.7	4.9	5.1
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		17.6	10.0	13.7	9.7	11.6
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		12	10	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		10	6	17	<5	<5
Lead	7439-92-1	5	mg/kg		26	16	24	8	9
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		15	13	30	3	4
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		11	16	54	6	<5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.3	0.2	0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		380	360	740	70	200
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH223_0.5m	NEL-BH163_0.2m	NEL-BH163_1.0m	NEL-BH164_0.2m	NEL-BH164_0.5m
Client sampling date / time					13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809532-009	EM1809532-012	EM1809532-014	EM1809532-015	EM1809532-016
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH223_0.5m	NEL-BH163_0.2m	NEL-BH163_1.0m	NEL-BH164_0.2m	NEL-BH164_0.5m
Client sampling date / time				13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809532-009	EM1809532-012	EM1809532-014	EM1809532-015	EM1809532-016
				Result	Result	Result	Result	Result

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH223_0.5m	NEL-BH163_0.2m	NEL-BH163_1.0m	NEL-BH164_0.2m	NEL-BH164_0.5m
Client sampling date / time				13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809532-009	EM1809532-012	EM1809532-014	EM1809532-015	EM1809532-016
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH223_0.5m	NEL-BH163_0.2m	NEL-BH163_1.0m	NEL-BH164_0.2m	NEL-BH164_0.5m
Client sampling date / time					13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809532-009	EM1809532-012	EM1809532-014	EM1809532-015	EM1809532-016
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		106	98.3	99.9	107	105
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		77.0	79.1	82.0	81.1	78.9
Toluene-D8	2037-26-5	0.1	%		72.8	70.6	75.3	76.1	67.4
4-Bromofluorobenzene	460-00-4	0.1	%		68.8	71.2	70.4	71.2	69.5
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		104	94.1	90.6	102	110
2-Chlorophenol-D4	93951-73-6	0.025	%		90.8	77.6	72.6	84.7	89.8
2,4,6-Tribromophenol	118-79-6	0.025	%		99.7	77.8	70.6	98.0	91.3
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		99.2	86.2	84.3	97.1	104
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		95.7	82.6	81.2	93.1	98.4
2-Fluorobiphenyl	321-60-8	0.025	%		97.9	90.2	90.1	105	105
Anthracene-d10	1719-06-8	0.025	%		110	96.7	99.7	107	111
4-Terphenyl-d14	1718-51-0	0.025	%		123	113	117	121	123



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC1005	----	----	----	----
Client sampling date / time				13-Jun-2018 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1809532-019	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	4.9	----	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	11.8	----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	5	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	13	----	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	9	----	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	12	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	320	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC1005	----	----	----	----
Client sampling date / time					13-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809532-019	-----	-----	-----	-----
				Result	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC1005	----	----	----	----
				Client sampling date / time	13-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809532-019	-----	-----	-----	-----
					Result	----	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				QC1005	----	----	----	----
Client sampling date / time				13-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1809532-019	-----	-----	-----	-----
Result				----	----	----	----	----

EP075I: Organochlorine Pesticides - Continued

alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC1005	----	----	----	----
Client sampling date / time					13-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809532-019	-----	-----	-----	-----
				Result		----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		104	----	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		82.2	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		78.4	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		73.1	----	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		92.2	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		84.8	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		77.9	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		90.8	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		87.7	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		92.9	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%		105	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		123	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB119	RB119	TB119	----	----
Client sampling date / time				13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809532-020	EM1809532-021	EM1809532-022	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.38	8.14	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB119	RB119	TB119	----	----
Client sampling date / time					13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809532-020	EM1809532-021	EM1809532-022	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				FB119	RB119	TB119	----	----
Client sampling date / time				13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809532-020	EM1809532-021	EM1809532-022	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB119	RB119	TB119	----	----
Client sampling date / time					13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809532-020	EM1809532-021	EM1809532-022	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		84.5	105	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		91.4	86.2	----	----	----
Toluene-D8	2037-26-5	5	%		91.6	80.2	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		102	94.5	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		26.4	27.5	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		60.6	59.9	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		60.7	66.8	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		70.4	71.3	----	----	----
Anthracene-d10	1719-06-8	1.0	%		78.1	87.3	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		84.1	103	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB119	RB119	TB119	----	----
Client sampling date / time					13-Jun-2018 00:00	13-Jun-2018 00:00	13-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809532-020	EM1809532-021	EM1809532-022	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		25.3	21.9	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		64.8	57.8	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		65.0	65.4	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		60.7	53.5	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		67.1	60.7	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		71.3	62.0	----	----	----
Anthracene-d10	1719-06-8	0.25	%		67.8	70.0	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		93.6	87.5	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		88.1	82.9	89.9	----	----
Toluene-D8	2037-26-5	2	%		81.0	70.9	77.0	----	----
4-Bromofluorobenzene	460-00-4	2	%		102	96.4	101	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Sampled by:	Date/Time:	Relinquished by:	Date/Time:
Received by:	Date/Time:	Relinquished by:	Date/Time:
Received by Courier:	Date/Time:	Relinquished by:	Date/Time:
Received by Lab:	Date/Time:		
Remarks: Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)			

Marie (M) 14/6 10-45

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Monday, 18 June 2018 10:04 AM
To: Shirley LeCornu
Cc: Kory.Auch@ghd.com; Mark Clough
Subject: RE: ON HOLD - EM1809532 - GHDSER North East Link

Hi Shirley

Please analyse the following at standard TAT:

NEL-BH161_0.2m = IWRG621
NEL-BH161_0.5m = IWRG621

NEL-BH224_0.2m = IWRG621
NEL-BH224_0.5m = IWRG621

NEL-BH223_0.2m = IWRG621
NEL-BH223_0.5m = IWRG621

NEL-BH163_0.2m = IWRG621
NEL-BH163_1.0m = IWRG621

NEL-BH164_0.2m = IWRG621
NEL-BH164_0.5m = IWRG621

QC1005 = IWRG621
QC2005 = IWRG621 (send to Eurofins)

RB115 = IWRG621 water equivalent
TB115 = Volatile TPH/BTEX
FB115 = IWRG621 water equivalent

Thanks

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance

GHD

Proudly employee owned

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Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the *Inside Waste Consultants Review*

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1809532**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 4
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link		
Sampler	: GHD		

Dates

Date Samples Received	: 14-Jun-2018 10:45	Issue Date	: 19-Jun-2018
Client Requested Due Date	: 25-Jun-2018	Scheduled Reporting Date	: 25-Jun-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 2.2°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 22 / 14

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
FB119	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB119	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
FB119	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB119	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
FB119	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB119	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1809532-001	13-Jun-2018 00:00	NEL-BH161_0.2m		✓	✓
EM1809532-002	13-Jun-2018 00:00	NEL-BH161_0.5m		✓	✓
EM1809532-003	13-Jun-2018 00:00	NEL-BH161_1.0m	✓		
EM1809532-004	13-Jun-2018 00:00	NEL-BH161_1.5m	✓		
EM1809532-005	13-Jun-2018 00:00	NEL-BH224_0.2m		✓	✓
EM1809532-006	13-Jun-2018 00:00	NEL-BH224_0.5m		✓	✓
EM1809532-007	13-Jun-2018 00:00	NEL-BH224_1.0m	✓		
EM1809532-008	13-Jun-2018 00:00	NEL-BH223_0.2m		✓	✓
EM1809532-009	13-Jun-2018 00:00	NEL-BH223_0.5m		✓	✓
EM1809532-010	13-Jun-2018 00:00	NEL-BH223_1.0m	✓		
EM1809532-011	13-Jun-2018 00:00	NEL-BH223_1.5m	✓		
EM1809532-012	13-Jun-2018 00:00	NEL-BH163_0.2m		✓	✓
EM1809532-013	13-Jun-2018 00:00	NEL-BH163_0.5m	✓		
EM1809532-014	13-Jun-2018 00:00	NEL-BH163_1.0m		✓	✓
EM1809532-015	13-Jun-2018 00:00	NEL-BH164_0.2m		✓	✓
EM1809532-016	13-Jun-2018 00:00	NEL-BH164_0.5m		✓	✓
EM1809532-017	13-Jun-2018 00:00	NEL-BH164_1.0m	✓		
EM1809532-018	13-Jun-2018 00:00	NEL-BH164_1.5m	✓		
EM1809532-019	13-Jun-2018 00:00	QC1005		✓	✓



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1809532-020	13-Jun-2018 00:00	FB119	✓	
EM1809532-021	13-Jun-2018 00:00	RB119	✓	
EM1809532-022	13-Jun-2018 00:00	TB119		✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator							
FB119	Clear Plastic Bottle - Natural	----	13-Jun-2018	14-Jun-2018	✗	18-Jun-2018	✗
RB119	Clear Plastic Bottle - Natural	----	13-Jun-2018	14-Jun-2018	✗	18-Jun-2018	✗

ALL ACCOUNTS

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QUALITY CONTROL REPORT

Work Order	: EM1809532	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 14-Jun-2018
Order number	:	Date Analysis Commenced	: 19-Jun-2018
C-O-C number	: ----	Issue Date	: 25-Jun-2018
Sampler	: GHD		
Site	: North East Link		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 22		
No. of samples analysed	: 14		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1736394)									
EM1809532-001	NEL-BH161_0.2m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	4.8	4.8	0.00	0% - 20%
EM1809532-016	NEL-BH164_0.5m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	5.1	5.1	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1737141)									
EM1809532-001	NEL-BH161_0.2m	EA055: Moisture Content	----	0.1	%	9.0	9.0	0.00	No Limit
EM1809532-019	QC1005	EA055: Moisture Content	----	0.1	%	11.8	13.6	14.6	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1736229)									
EM1809532-001	NEL-BH161_0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	5	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	5	5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	18	20	9.74	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	7	9	26.1	No Limit
EM1809532-016	NEL-BH164_0.5m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	5	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	10	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1736229) - continued									
EM1809532-016	NEL-BH164_0.5m	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1736228)									
EM1809532-001	NEL-BH161_0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.3	0.4	0.00	No Limit
EM1809532-016	NEL-BH164_0.5m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1739951)									
EM1809532-001	NEL-BH161_0.2m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809532-016	NEL-BH164_0.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1740462)									
EM1809532-001	NEL-BH161_0.2m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809532-016	NEL-BH164_0.5m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1736452)									
EM1809532-001	NEL-BH161_0.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	230	220	0.00	No Limit
EM1809532-016	NEL-BH164_0.5m	EK040T: Fluoride	16984-48-8	40	mg/kg	200	200	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1737552)									
EM1809532-001	NEL-BH161_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809532-019	QC1005	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1736311)									
EM1809532-001	NEL-BH161_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809532-019	QC1005	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP074H: Naphthalene (QC Lot: 1736311)									
EM1809532-001	NEL-BH161_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1809532-019	QC1005	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1736311)									
EM1809532-001	NEL-BH161_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1736311) - continued									
EM1809532-001	NEL-BH161_0.2m	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1809532-019	QC1005	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1737550)							
EM1809532-001	NEL-BH161_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1737550) - continued									
EM1809532-001	NEL-BH161_0.2m	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1809532-019	QC1005	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1737550)									
EM1809532-001	NEL-BH161_0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1809532-019	QC1005	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EM1809532-001	NEL-BH161_0.2m	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1737550)									
EM1809532-001	NEL-BH161_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1737550) - continued									
EM1809532-001	NEL-BH161_0.2m	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809532-019	QC1005	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1737550)									
EM1809532-001	NEL-BH161_0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1737550) - continued									
EM1809532-001	NEL-BH161_0.2m	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1809532-019	QC1005	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1736311)									
EM1809532-001	NEL-BH161_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1809532-019	QC1005	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1737551)									
EM1809532-001	NEL-BH161_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809532-019	QC1005	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

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 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1737551) - continued									
EM1809532-019	QC1005	EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1736311)									
EM1809532-001	NEL-BH161_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1809532-019	QC1005	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1737551)									
EM1809532-001	NEL-BH161_0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809532-019	QC1005	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1739037)									
EM1809433-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.57	6.55	0.305	0% - 20%
EM1809676-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.02	8.06	0.498	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1739113)									
EM1809762-003	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	0.001	<0.001	0.00	No Limit
EM1809532-020	FB119	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1739115)									
EM1809635-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.007	0.008	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.050	0.050	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809532-020	FB119	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit

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Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1738889) - continued									
EM1809693-031	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1809532-020	FB119	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1738889)									
EM1809693-031	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1809532-020	FB119	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1738889)									
EM1809693-031	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1809532-020	FB119	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1736229)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	90.4	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	94.4	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	85.9	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	83.5	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	91.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	95.2	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	95.8	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1736228)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	94.1	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1739951)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	102	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1740462)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	91.3	80	110
EK040T: Fluoride Total (QCLot: 1736452)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	96.0	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1737552)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	96.4	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1736311)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	82.0	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	84.2	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	82.0	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	81.9	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	82.9	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	80.8	74	114
EP074H: Naphthalene (QCLot: 1736311)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	80.1	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1736311)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	93.5	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	82.6	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1736311) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	82.5	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	79.9	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	82.8	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	82.2	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	89.2	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	83.4	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	90.8	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	83.8	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	86.8	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	80.4	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	91.8	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	85.9	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	84.0	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	82.9	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	85.6	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	84.6	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	81.3	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1737550)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	101	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	88.4	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	92.7	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	84.0	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	91.7	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	81.6	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	86.5	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	84.8	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	70.0	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1737550)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	90.6	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	96.7	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	94.0	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	87.8	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	100	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	96.2	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	114	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	82.0	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	96.1	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	79.4	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1737550)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	94.0	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	99.1	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	99.6	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	97.0	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	95.6	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	65.6	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	99.7	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	99.2	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	95.7	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	107	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	106	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	99.7	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	105	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	105	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	100	55	137
EP075I: Organochlorine Pesticides (QCLot: 1737550)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	95.6	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	96.0	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	95.1	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	98.3	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	96.6	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	93.1	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	96.3	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	99.3	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	105	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	101	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	99.8	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	102	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	102	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	116	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	88.6	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	104	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	108	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	106	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	99.2	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	99.2	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1736311)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	74.1	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1739113)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	94.8	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1739115)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.4	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.0	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.1	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	96.5	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	100.0	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1739114)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.1	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1737214)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	105	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1742808)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	93.3	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1739039)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	106	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1736958)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	83.8	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1738890)								



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1738890) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	104	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1738890)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	94.5	64	139
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	92.6	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	98.0	81	144
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	98.4	73	121
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	102	78	120
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	93.5	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	88.4	66	119
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	106	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	98.8	70	120
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	105	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	93.9	75	119
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	98.0	75	112
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	103	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	103	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1738890)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	102	82	114
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	102	76	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	101	82	112
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	104	62	119
EP074G: Trihalomethanes (QCLot: 1738890)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	104	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1736959)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	66.9	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	68.6	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	70.6	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	73.8	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	73.9	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	88.3	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	77.2	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	75.2	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	71.0	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	74.7	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	86.7	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	89.4	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	91.4	56	126



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1736959) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	78.5	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	76.9	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	78.8	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1736962)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	79.4	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	86.1	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	88.2	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	77.9	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	89.0	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	79.6	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	90.1	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	91.7	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	83.2	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1736962)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	29.3	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	79.7	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	70.6	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	87.9	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	104	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	118	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	26.7	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	75.6	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	86.7	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	120	32	135
EP075I: Organochlorine Pesticides (QCLot: 1736962)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	91.8	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	91.1	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	89.8	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	89.9	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	90.8	60	132
EP075-EM: 4,4`-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	96.8	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	91.3	59	130
EP075-EM: 4,4`-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	88.4	62	136
EP075-EM: 4,4`-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	92.7	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1736960)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	76.1	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	82.9	60	133



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1739951) - continued							
EM1809532-002	NEL-BH161_0.5m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	74.7	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1740462)							
EM1809532-002	NEL-BH161_0.5m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	91.2	77	113
EK040T: Fluoride Total (QCLot: 1736452)							
EM1809532-002	NEL-BH161_0.5m	EK040T: Fluoride	16984-48-8	400 mg/kg	87.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1737552)							
EM1809532-006	NEL-BH224_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	107	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1736311)							
EM1809532-002	NEL-BH161_0.5m	EP074-UT: Benzene	71-43-2	2 mg/kg	70.6	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	69.4	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1736311)							
EM1809532-002	NEL-BH161_0.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	68.0	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	68.6	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	72.5	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1737550)							
EM1809532-002	NEL-BH161_0.5m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	94.0	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	71.7	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	47.3	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1737550)							
EM1809532-002	NEL-BH161_0.5m	EP075-EM: Phenol	108-95-2	1 mg/kg	84.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	72.3	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1737550)							
EM1809532-002	NEL-BH161_0.5m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	98.3	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	87.8	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1736311)							
EM1809532-002	NEL-BH161_0.5m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	54.9	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1737551)							
EM1809532-005	NEL-BH224_0.2m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	100	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	107	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	96.6	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1736311)							
EM1809532-002	NEL-BH161_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	53.9	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1737551)							
EM1809532-005	NEL-BH224_0.2m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	100	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	103	67	121

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 Work Order : EM1809532
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1737551) - continued							
EM1809532-005	NEL-BH224_0.2m	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	92.0	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1739115)							
EM1809532-020	FB119	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	94.0	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	94.3	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.1	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.7	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.4	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	94.9	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1739114)							
EM1809532-021	RB119	EG035F: Mercury	7439-97-6	0.01 mg/L	96.6	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1737214)							
EM1809532-021	RB119	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	102	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1742808)							
EM1809532-021	RB119	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	95.4	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1739039)							
EM1809433-006	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	118	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1738890)							
EM1809532-021	RB119	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	84.8	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	77.6	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1738890)							
EM1809532-021	RB119	EP074: Chlorobenzene	108-90-7	20 µg/L	94.1	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1738889)							
EM1809532-021	RB119	EP080: C6 - C9 Fraction	----	280 µg/L	63.0	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1738889)							
EM1809532-021	RB119	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	63.6	44	122
EP080: BTEXN (QCLot: 1738889)							
EM1809532-021	RB119	EP080: Benzene	71-43-2	20 µg/L	79.8	68	130
		EP080: Toluene	108-88-3	20 µg/L	83.0	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1809532	Page	: 1 of 15
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 14-Jun-2018
Site	: North East Link	Issue Date	: 25-Jun-2018
Sampler	: GHD	No. of samples received	: 22
Order number	:	No. of samples analysed	: 14

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural FB119, RB119	----	----	----	20-Jun-2018	13-Jun-2018	7

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Container / Client Sample ID(s)							
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001)							
NEL-BH161_0.2m,	NEL-BH161_0.5m,	13-Jun-2018	19-Jun-2018	✔	19-Jun-2018	19-Jun-2018	✔
NEL-BH224_0.2m,	NEL-BH224_0.5m,						
NEL-BH223_0.2m,	NEL-BH223_0.5m,						
NEL-BH163_0.2m,	NEL-BH163_1.0m,						
NEL-BH164_0.2m,	NEL-BH164_0.5m,						
QC1005							



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		13-Jun-2018	----	----	----	19-Jun-2018	27-Jun-2018	✓
NEL-BH161_0.2m,	NEL-BH161_0.5m,							
NEL-BH224_0.2m,	NEL-BH224_0.5m,							
NEL-BH223_0.2m,	NEL-BH223_0.5m,							
NEL-BH163_0.2m,	NEL-BH163_1.0m,							
NEL-BH164_0.2m,	NEL-BH164_0.5m,							
QC1005								
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)		13-Jun-2018	20-Jun-2018	10-Dec-2018	✓	20-Jun-2018	10-Dec-2018	✓
NEL-BH161_0.2m,	NEL-BH161_0.5m,							
NEL-BH224_0.2m,	NEL-BH224_0.5m,							
NEL-BH223_0.2m,	NEL-BH223_0.5m,							
NEL-BH163_0.2m,	NEL-BH163_1.0m,							
NEL-BH164_0.2m,	NEL-BH164_0.5m,							
QC1005								
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)		13-Jun-2018	20-Jun-2018	11-Jul-2018	✓	22-Jun-2018	11-Jul-2018	✓
NEL-BH161_0.2m,	NEL-BH161_0.5m,							
NEL-BH224_0.2m,	NEL-BH224_0.5m,							
NEL-BH223_0.2m,	NEL-BH223_0.5m,							
NEL-BH163_0.2m,	NEL-BH163_1.0m,							
NEL-BH164_0.2m,	NEL-BH164_0.5m,							
QC1005								
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)		13-Jun-2018	20-Jun-2018	11-Jul-2018	✓	20-Jun-2018	27-Jun-2018	✓
NEL-BH161_0.2m,	NEL-BH161_0.5m,							
NEL-BH224_0.2m,	NEL-BH224_0.5m,							
NEL-BH223_0.2m,	NEL-BH223_0.5m,							
NEL-BH163_0.2m,	NEL-BH163_1.0m,							
NEL-BH164_0.2m,	NEL-BH164_0.5m,							
QC1005								
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)		13-Jun-2018	20-Jun-2018	27-Jun-2018	✓	21-Jun-2018	04-Jul-2018	✓
NEL-BH161_0.2m,	NEL-BH161_0.5m,							
NEL-BH224_0.2m,	NEL-BH224_0.5m,							
NEL-BH223_0.2m,	NEL-BH223_0.5m,							
NEL-BH163_0.2m,	NEL-BH163_1.0m,							
NEL-BH164_0.2m,	NEL-BH164_0.5m,							
QC1005								



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH161_0.2m, NEL-BH224_0.2m, NEL-BH223_0.2m, NEL-BH163_0.2m, NEL-BH164_0.2m, QC1005 NEL-BH161_0.5m, NEL-BH224_0.5m, NEL-BH223_0.5m, NEL-BH163_1.0m, NEL-BH164_0.5m	13-Jun-2018	20-Jun-2018	27-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH161_0.2m, NEL-BH224_0.2m, NEL-BH223_0.2m, NEL-BH163_0.2m, NEL-BH164_0.2m, QC1005 NEL-BH161_0.5m, NEL-BH224_0.5m, NEL-BH223_0.5m, NEL-BH163_1.0m, NEL-BH164_0.5m	13-Jun-2018	20-Jun-2018	27-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH161_0.2m, NEL-BH224_0.2m, NEL-BH223_0.2m, NEL-BH163_0.2m, NEL-BH164_0.2m, QC1005 NEL-BH161_0.5m, NEL-BH224_0.5m, NEL-BH223_0.5m, NEL-BH163_1.0m, NEL-BH164_0.5m	13-Jun-2018	20-Jun-2018	27-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH161_0.2m, NEL-BH224_0.2m, NEL-BH223_0.2m, NEL-BH163_0.2m, NEL-BH164_0.2m, QC1005 NEL-BH161_0.5m, NEL-BH224_0.5m, NEL-BH223_0.5m, NEL-BH163_1.0m, NEL-BH164_0.5m	13-Jun-2018	20-Jun-2018	27-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Matrix: **WATER** Evaluation: **x** = Holding time breach ; **✓** = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) FB119, RB119	13-Jun-2018	----	----	----	20-Jun-2018	13-Jun-2018	✗
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) FB119, RB119	13-Jun-2018	----	----	----	20-Jun-2018	10-Dec-2018	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) FB119, RB119	13-Jun-2018	----	----	----	25-Jun-2018	27-Jun-2018	✓



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	RB119	13-Jun-2018	----	----	----	19-Jun-2018	11-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)	RB119	13-Jun-2018	----	----	----	21-Jun-2018	27-Jun-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	RB119	13-Jun-2018	----	----	----	20-Jun-2018	11-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)	RB119	13-Jun-2018	20-Jun-2018	20-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)	RB119	13-Jun-2018	20-Jun-2018	27-Jun-2018	✓	21-Jun-2018	27-Jun-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	RB119	13-Jun-2018	20-Jun-2018	27-Jun-2018	✓	21-Jun-2018	27-Jun-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	RB119	13-Jun-2018	20-Jun-2018	27-Jun-2018	✓	21-Jun-2018	27-Jun-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)	RB119	13-Jun-2018	20-Jun-2018	27-Jun-2018	✓	21-Jun-2018	27-Jun-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))	RB119	13-Jun-2018	20-Jun-2018	20-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)	RB119	13-Jun-2018	19-Jun-2018	20-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)	RB119	13-Jun-2018	19-Jun-2018	20-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM)	RB119	13-Jun-2018	19-Jun-2018	20-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)	RB119	13-Jun-2018	20-Jun-2018	20-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)	RB119, TB119	13-Jun-2018	20-Jun-2018	27-Jun-2018	✓	21-Jun-2018	27-Jun-2018	✓

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 Work Order : EM1809532
 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
FB119,	RB119	13-Jun-2018	20-Jun-2018	20-Jun-2018	✔	21-Jun-2018	30-Jul-2018	✔
Amber VOC Vial - Sulfuric Acid (EP080)								
FB119,	RB119,	13-Jun-2018	20-Jun-2018	27-Jun-2018	✔	21-Jun-2018	27-Jun-2018	✔
TB119								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
FB119,	RB119,	13-Jun-2018	20-Jun-2018	27-Jun-2018	✔	21-Jun-2018	27-Jun-2018	✔
TB119								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	5	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1809540**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **North East Link - Contamination Assessment**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 05-Jun-2018 12:40
Date Analysis Commenced : 19-Jun-2018
Issue Date : 21-Jun-2018 11:13



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1809096 .



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

NEL-ENV-BH023_0.6-0.7

Client sampling date / time

05-Jun-2018 00:00

Compound

CAS Number

LOR

Unit

EM1809540-001

Result

EG005C: Leachable Metals by ICPAES

Lead	7439-92-1	0.1	mg/L	<0.1	----	----	----	----
Nickel	7440-02-0	0.1	mg/L	<0.1	----	----	----	----

EK040P: Fluoride by PC Titrator

Fluoride	16984-48-8	0.1	mg/L	0.2	----	----	----	----
-----------------	------------	-----	------	------------	------	------	------	------



Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Client sample ID

				NEL-ENV-BH023_0.6-0.7	----	----	----	----
Client sampling date / time				05-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1809540-001	-----	-----	-----	-----
Result					----	----	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	8.7	----	----	----	----
After HCl pH	----	0.1	pH Unit	1.4	----	----	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	----	----	----	----
Final pH	----	0.1	pH Unit	4.9	----	----	----	----

Rebatch

Client / Client code: GHD

Project: 31350060910

Project Manger: KORY AUCH

Date /time sample rec: 5/6 @ 12:40pm

Date/time Instructions rec: 14/6 @ 12:59pm

Due date: std

Due date surcharge:

CS Contact: Shirley

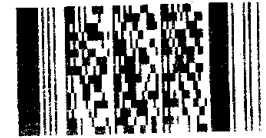
Additional Information:

Environmental Division

Melbourne

Work Order Reference
W1100054

EM1809540



Telephone : + 61-3-8549 9600

MS : 2359

$$B^N_{15/6}$$
[illegible]

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Thursday, 14 June 2018 12:59 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1809096 | Overall Description: North East Link - Contamination Assessment
Attachments: EM1809096_0_COA_GL_EPA_WASTE.PDF; EM1809096_COC.PDF

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Shirley,

Could we please have IWRG621 leachability tests conducted for fluoride, lead and nickel on one soil sample?

GHD sample ID: NEL-ENV-BH023_0.6-0.7

ALS sample ID: EM1809096-004

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>

Sent: Wednesday, 13 June 2018 4:01 PM

To: Kory Auch <Kory.Auch@ghd.com>

Subject: RESULTS & EDD & INVOICE for ALS Workorder : EM1809096 | Overall Description: North East Link - Contamination Assessment



Deliverables for ALS Workorder EM1809096

Project: 31350060910

**Overall Description: North East Link - Contamination
Assessment**

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1809540**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link - Contamination Assessment		
Sampler	:		

Dates

Date Samples Received	: 05-Jun-2018 12:40	Issue Date	: 15-Jun-2018
Client Requested Due Date	: 21-Jun-2018	Scheduled Reporting Date	: 21-Jun-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1809096 .



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM1809540-001 : [05-Jun-2018] : NEL-ENV-BH023_0.6-0.7

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EK040-P Fluoride (PCT)	SOIL - EN60a ASLP Leachate Procedure
EM1809540-001	05-Jun-2018 00:00	NEL-ENV-BH023_0.6-0.7	✓	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1809540	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 05-Jun-2018
Order number	: ----	Date Analysis Commenced	: 19-Jun-2018
C-O-C number	: ----	Issue Date	: 21-Jun-2018
Sampler	: ----		
Site	: North East Link - Contamination Assessment		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1739811)									
EM1809536-001	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1809536-010	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit		Result		LCS	Low
EG005C: Leachable Metals by ICPAES (QCLot: 1739811)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	103	88	113
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	86.4	86	111
EK040P: Fluoride by PC Titrator (QCLot: 1739915)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	106	85	112

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1739811)							
EM1809536-002	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	95.3	86	118
		EG005C: Nickel	7440-02-0	1 mg/L	95.0	88	116

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1809540	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 05-Jun-2018
Site	: North East Link - Contamination Assessment	Issue Date	: 21-Jun-2018
Sampler	: ----	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Fluoride by PC Titrator	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Fluoride by PC Titrator	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 28 day HT(e.g. Hg, CrVI) (EN60a) NEL-ENV-BH023 0.6-0.7	05-Jun-2018	19-Jun-2018	03-Jul-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-ENV-BH023_0.6-0.7		19-Jun-2018	20-Jun-2018	16-Dec-2018	✓	20-Jun-2018	16-Dec-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) NEL-ENV-BH023_0.6-0.7		19-Jun-2018	----	----	----	20-Jun-2018	17-Jul-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Fluoride by PC Titrator	EK040P	0	1	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Fluoride by PC Titrator	EK040P	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Fluoride by PC Titrator	EK040P	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Fluoride by PC Titrator	EK040P	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	SOIL	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1809613**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **AS**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **5**
No. of samples analysed : **5**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 15-Jun-2018 16:15
Date Analysis Commenced : 19-Jun-2018
Issue Date : 25-Jun-2018 15:33



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EG005T: EM1809685_032 Poor duplicate precision for Copper due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- Samples were filtered through a 0.45um filter prior to the dissolved metals analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH017_2.0m	NEL-EF-BH017_3.0m	----	----	----
Client sampling date / time					15-Jun-2018 00:00	15-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809613-004	EM1809613-005	-----	-----	-----
					Result	Result	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.1	7.0	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.1	14.3	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		10	7	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		<5	9	----	----	----
Lead	7439-92-1	5	mg/kg		12	14	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		8	15	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		7	19	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		270	480	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH017_2.0m	NEL-EF-BH017_3.0m	----	----	----
Client sampling date / time					15-Jun-2018 00:00	15-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809613-004	EM1809613-005	-----	-----	-----
				Result	Result		----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH017_2.0m	NEL-EF-BH017_3.0m	----	----	----
Client sampling date / time					15-Jun-2018 00:00	15-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809613-004	EM1809613-005	-----	-----	-----
					Result	Result	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH017_2.0m	NEL-EF-BH017_3.0m	----	----	----
Client sampling date / time					15-Jun-2018 00:00	15-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809613-004	EM1809613-005	-----	-----	-----
				Result	Result		----	----	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH017_2.0m	NEL-EF-BH017_3.0m	----	----	----
Client sampling date / time					15-Jun-2018 00:00	15-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809613-004	EM1809613-005	-----	-----	-----
				Result	Result		----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		103	113	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		76.8	75.5	----	----	----
Toluene-D8	2037-26-5	0.1	%		70.9	65.3	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		77.9	73.9	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		91.1	102	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		78.9	88.6	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		88.8	94.7	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		79.5	92.8	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		79.3	89.6	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		94.7	105	----	----	----
Anthracene-d10	1719-06-8	0.025	%		104	112	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		116	120	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB201	RB201	FB201	----	----
Client sampling date / time					15-Jun-2018 00:00	15-Jun-2018 00:00	15-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809613-001	EM1809613-002	EM1809613-003	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		----	7.22	5.51	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		----	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		----	<0.0001	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L		----	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L		----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L		----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L		----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L		----	<0.01	<0.01	----	----
Tin	7440-31-5	0.001	mg/L		----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L		----	<0.005	<0.005	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	<0.0001	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		----	<0.01	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		----	<0.004	<0.004	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		----	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		----	<1	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		----	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		----	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		----	<5	<5	----	----
Methylene chloride	75-09-2	5	µg/L		----	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		----	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		----	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		----	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		----	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		----	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L		----	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB201	RB201	FB201	----	----
Client sampling date / time					15-Jun-2018 00:00	15-Jun-2018 00:00	15-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809613-001	EM1809613-002	EM1809613-003	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		----	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L		----	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		----	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		----	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		----	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		----	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		----	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		----	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		----	<5	<5	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		----	<5	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		----	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L		----	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L		----	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L		----	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L		----	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L		----	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L		----	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		----	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		----	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		----	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		----	<2	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		----	<2	<2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				TB201	RB201	FB201	----	----
Client sampling date / time				15-Jun-2018 00:00	15-Jun-2018 00:00	15-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809613-001	EM1809613-002	EM1809613-003	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	----	<2	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	----	<4	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	----	<2	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	----	<2	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	----	<2	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	----	<2	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	----	<2	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	----	<4	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	----	<4	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	----	<4	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	----	<4	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	----	<4	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	----	<100	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	----	<50	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	----	<50	<50	----	----
Dinoseb	88-85-7	50	µg/L	----	<50	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	----	<50	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	----	<0.5	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	----	<0.5	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	----	<0.5	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	<0.5	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	----	<0.5	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB201	RB201	FB201	----	----
Client sampling date / time					15-Jun-2018 00:00	15-Jun-2018 00:00	15-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809613-001	EM1809613-002	EM1809613-003	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		----	76.3	76.2	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		----	94.0	93.5	----	----
Toluene-D8	2037-26-5	5	%		----	84.4	83.4	----	----
4-Bromofluorobenzene	460-00-4	5	%		----	106	105	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	27.4	27.9	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	72.1	72.9	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	69.3	65.3	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	78.4	80.1	----	----
Anthracene-d10	1719-06-8	1.0	%		----	86.4	83.6	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	97.0	98.4	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB201	RB201	FB201	----	----
Client sampling date / time					15-Jun-2018 00:00	15-Jun-2018 00:00	15-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809613-001	EM1809613-002	EM1809613-003	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		----	34.2	37.2	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		----	93.2	100	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		----	74.3	80.2	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		----	94.4	94.5	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		----	93.3	98.2	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		----	93.2	103	----	----
Anthracene-d10	1719-06-8	0.25	%		----	107	112	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		----	125	126	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		97.1	95.6	95.1	----	----
Toluene-D8	2037-26-5	2	%		86.7	82.8	81.9	----	----
4-Bromofluorobenzene	460-00-4	2	%		106	102	102	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		<i>Recovery Limits (%)</i>	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD

Page 1 of 1[illegible]

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 18 June 2018 10:23 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: EM1809613, EM1809614 - GHD - 31350060910
Attachments: EM1809613.pdf; EM1809614.pdf

Hi Shirley,

Please analyse the following at standard TAT:

EM1809613:

TB201 = Volatile TPH/BTEX
RB201 = IWRG621 water equivalent
FB201 = IWRG621 water equivalent

NEL-EF-BH017_2.0m = IWRG621
NEL-EF-BH017_3.0m = IWRG621

EM1809614:

NEL-BH101_0.5m = IWRG621
NEL-BH101_1.0m = IWRG621

NEL-EF-BH015_0.5m = IWRG621
NEL-EF-BH015_1.0m = IWRG621

NEL-EF-BH018_0.2m = IWRG621
NEL-EF-BH018_0.5m = IWRG621

RB120 = IWRG621 water equivalent
FB120 = IWRG621 water equivalent
TB120 = Volatile TPH/BTEX

Regards,

Kory Auch
Contamination Assessment & Remediation

GHD

Proudly employee owned

T: +61 3 8687 8948 | V: 318948 | M: +61 0478 797 000 | E: kory.auch@ghd.com
Level 18, 180 Lonsdale Street Melbourne Victoria 3000 Australia | www.ghd.com

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Please consider our environment before printing this email

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1809613**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link - Contamination		
Sampler	: AS		

Dates

Date Samples Received	: 15-Jun-2018 16:15	Issue Date	: 18-Jun-2018
Client Requested Due Date	: 25-Jun-2018	Scheduled Reporting Date	: 25-Jun-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 3.5°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 5 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Samples to be filtered through a 0.45um filter prior to the dissolved metals analysis.**
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB201	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB201	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB201	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB201	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB201	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB201	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1809613-004	15-Jun-2018 00:00	NEL-EF-BH017_2.0m	✓	✓
EM1809613-005	15-Jun-2018 00:00	NEL-EF-BH017_3.0m	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA WRC621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1809613-001	15-Jun-2018 00:00	TB201		✓
EM1809613-002	15-Jun-2018 00:00	RB201	✓	
EM1809613-003	15-Jun-2018 00:00	FB201	✓	

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
Client Sample ID(s)				Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator							
FB201	Clear Plastic Bottle - Natural	----	15-Jun-2018	15-Jun-2018	✓	18-Jun-2018	✗



RB201	Clear Plastic Bottle - Natural	----	15-Jun-2018	15-Jun-2018	✓	18-Jun-2018	✗
-------	--------------------------------	------	-------------	-------------	---	-------------	---

Requested Deliverables

ALL ACCOUNTS

- A4 - AU Tax Invoice (INV)

Email ap-fss@ghd.com

DAVID QUINN

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESdat (ESRN_ESDAT)
- EPA Waste Classification & Categorisation Guideline Report (COA GL EPA WASTE)

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GHD LAB REPORTS

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESDat (ESRN_ESDAT)
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)

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KORY AUCH

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESDat (ESRN_ESDAT)
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)

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QUALITY CONTROL REPORT

Work Order	: EM1809613	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 15-Jun-2018
Order number	:	Date Analysis Commenced	: 19-Jun-2018
C-O-C number	: ----	Issue Date	: 25-Jun-2018
Sampler	: AS		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 5		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1740511)									
EM1809613-004	NEL-EF-BH017_2.0m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.1	6.0	1.65	0% - 20%
EM1809715-013	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.5	7.7	2.63	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1735902)									
EM1809613-004	NEL-EF-BH017_2.0m	EA055: Moisture Content	----	0.1	%	13.1	13.2	0.00	0% - 50%
EM1809685-027	Anonymous	EA055: Moisture Content	----	0.1	%	13.2	12.9	2.22	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1739372)									
EM1809685-032	Anonymous	EG005T: Copper	7440-50-8	5	mg/kg	967	# 1470	41.0	0% - 20%
EM1809613-004	NEL-EF-BH017_2.0m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	8	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	13	26.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	7	36.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	22	64.2	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	7	28	120	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
EM1809685-032	Anonymous	EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	6	26.9	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	44	34	26.6	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1739372) - continued									
EM1809685-032	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	98	94	4.72	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1739371)									
EM1809613-004	NEL-EF-BH017_2.0m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809685-032	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1739951)									
EM1809532-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809532-016	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1740462)									
EM1809532-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809532-016	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1735901)									
EM1809613-004	NEL-EF-BH017_2.0m	EK040T: Fluoride	16984-48-8	40	mg/kg	270	280	0.00	No Limit
EM1809720-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	190	180	5.87	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1735916)									
EM1809613-004	NEL-EF-BH017_2.0m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809719-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1735906)									
EM1809613-004	NEL-EF-BH017_2.0m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809720-003	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1735906)									
EM1809613-004	NEL-EF-BH017_2.0m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1809720-003	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1735906)									
EM1809613-004	NEL-EF-BH017_2.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1735906) - continued									
EM1809613-004	NEL-EF-BH017_2.0m	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1809720-003	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1735914)							
EM1809613-004	NEL-EF-BH017_2.0m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1735914) - continued									
EM1809613-004	NEL-EF-BH017_2.0m	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1809719-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1735914)									
EM1809613-004	NEL-EF-BH017_2.0m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1809719-003	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EM1809613-004	NEL-EF-BH017_2.0m	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1735914)									
EM1809613-004	NEL-EF-BH017_2.0m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1735914) - continued									
EM1809613-004	NEL-EF-BH017_2.0m	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809719-003	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1735914)									
EM1809613-004	NEL-EF-BH017_2.0m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1735914) - continued									
EM1809613-004	NEL-EF-BH017_2.0m	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1809719-003	Anonymous	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1735906)									
EM1809613-004	NEL-EF-BH017_2.0m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1809720-003	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1735915)									
EM1809613-004	NEL-EF-BH017_2.0m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809719-003	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

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 Work Order : EM1809613
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1735915) - continued									
EM1809719-003	Anonymous	EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1735906)									
EM1809613-004	NEL-EF-BH017_2.0m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1809720-003	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1735915)									
EM1809613-004	NEL-EF-BH017_2.0m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809719-003	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1735709)									
EM1809597-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.70	7.67	0.390	0% - 20%
EM1809617-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.65	6.63	0.301	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1739113)									
EM1809762-003	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	0.001	<0.001	0.00	No Limit
EM1809532-020	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1739115)									
EM1809635-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.007	0.008	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.050	0.050	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809532-020	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1739115) - continued									
EM1809532-020	Anonymous	EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1739114)									
EM1809635-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1809532-020	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1737214)									
EM1809532-020	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809603-033	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1742808)									
EM1809532-020	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1809693-030	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1735705)									
EM1809572-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1809617-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1735516)									
EM1809613-002	RB201	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1735516)									
EM1809613-002	RB201	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1735516)									
EM1809613-002	RB201	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1735516)									
EM1809613-002	RB201	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1735515)									

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 Work Order : EM1809613
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1735515) - continued									
EM1809662-060	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1809613-002	RB201	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1735515)									
EM1809662-060	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1809613-002	RB201	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1735515)									
EM1809662-060	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1809613-002	RB201	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1739372)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	88.4	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	94.1	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	83.0	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	85.5	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	86.7	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	100.0	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	96.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	84.8	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1739371)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.1	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1739951)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	102	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1740462)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	91.3	80	110
EK040T: Fluoride Total (QCLot: 1735901)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	99.5	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1735916)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	117	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1735906)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	99.8	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	96.8	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	99.8	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	96.7	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	94.1	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	94.9	74	114
EP074H: Naphthalene (QCLot: 1735906)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	95.7	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1735906)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	99.5	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	100	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1735906) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	97.9	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	105	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	99.6	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	105	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	111	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	105	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	94.2	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	99.7	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	90.3	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	94.2	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	102	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	92.4	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	97.6	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	95.4	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	91.0	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	91.9	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1735914)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	99.3	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	87.5	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	93.7	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	84.0	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	89.8	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	80.7	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	98.4	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	100	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	86.9	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1735914)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	87.1	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	97.2	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	91.8	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	85.8	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	101	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	91.0	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	93.0	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	89.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	106	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	91.8	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1735914)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	100	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	104	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	96.5	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	105	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	106	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	71.2	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	108	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	110	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	102	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	112	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	112	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	106	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	111	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	111	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	108	55	137
EP075I: Organochlorine Pesticides (QCLot: 1735914)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	105	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	106	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	106	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	107	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	104	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	104	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	107	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	111	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	117	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	112	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	116	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	109	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	108	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	167	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	92.6	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	110	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	115	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	113	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	104	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	104	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1735906)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	97.9	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1739113)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	94.8	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1739115)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.4	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.0	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.1	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	96.5	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	100.0	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1739114)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.1	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1737214)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	105	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1742808)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	93.3	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1735705)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1735841)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	86.4	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1735516)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1735516) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	94.9	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1735516)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	84.2	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	100	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	96.6	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	89.2	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	92.2	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	85.2	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	85.8	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	97.1	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	87.4	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	101	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	86.2	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	91.0	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	106	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	88.3	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1735516)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	92.3	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	94.2	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	98.4	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	90.2	62	119
EP074G: Trihalomethanes (QCLot: 1735516)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	93.9	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1735842)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	67.1	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	70.6	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	71.5	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	74.1	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	78.1	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	92.0	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	85.9	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	84.5	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	88.1	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	83.8	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	86.9	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	84.0	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	86.0	56	126

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound		CAS Number	LOR		Unit	Result	Spike Concentration	Spike Recovery (%) LCS
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1735842) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene		193-39-5	1	µg/L	<1.0	5 µg/L	83.8	53 123
EP075(SIM): Dibenz(a.h)anthracene		53-70-3	1	µg/L	<1.0	5 µg/L	82.2	53 125
EP075(SIM): Benzo(g.h.i)perylene		191-24-2	1	µg/L	<1.0	5 µg/L	84.2	53 125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1735939)								
EP075-EM: 2-Chlorophenol		95-57-8	2	µg/L	<2	10 µg/L	86.5	44 114
EP075-EM: 2.4-Dichlorophenol		120-83-2	2	µg/L	<2	10 µg/L	70.2	53 121
EP075-EM: 2.6-Dichlorophenol		87-65-0	2	µg/L	<2	10 µg/L	78.8	55 119
EP075-EM: 4-Chloro-3-methylphenol		59-50-7	4	µg/L	<4	10 µg/L	70.6	57 116
EP075-EM: 2.4.5-Trichlorophenol		95-95-4	2	µg/L	<2	10 µg/L	76.5	51 121
EP075-EM: 2.4.6-Trichlorophenol		88-06-2	2	µg/L	<2	10 µg/L	67.9	56 120
EP075-EM: 2.3.5.6-Tetrachlorophenol		935-95-5	2	µg/L	<2	10 µg/L	78.8	41 125
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol		4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	80.8	47 125
EP075-EM: Pentachlorophenol		87-86-5	2	µg/L	<2	20 µg/L	72.8	22 122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1735939)								
EP075-EM: Phenol		108-95-2	4	µg/L	<4	10 µg/L	31.0	20 57
EP075-EM: 2-Methylphenol		95-48-7	4	µg/L	<4	10 µg/L	76.2	49 107
EP075-EM: 3- & 4-Methylphenol		1319-77-3	4	µg/L	<4	20 µg/L	61.4	48 101
EP075-EM: 2-Nitrophenol		88-75-5	4	µg/L	<4	10 µg/L	71.0	53 123
EP075-EM: 2.4-Dimethylphenol		105-67-9	4	µg/L	<4	10 µg/L	88.2	52 128
EP075-EM: 2.4-Dinitrophenol		51-28-5	100	µg/L	<100	60 µg/L	110	21 130
EP075-EM: 4-Nitrophenol		100-02-7	50	µg/L	<50	60 µg/L	33.3	13 60
EP075-EM: 2-Methyl-4.6-dinitrophenol		8071-51-0	50	µg/L	<50	60 µg/L	83.2	56 126
EP075-EM: Dinoseb		88-85-7	50	µg/L	<50	60 µg/L	96.0	55 128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol		131-89-5	50	µg/L	<50	50 µg/L	91.1	32 135
EP075I: Organochlorine Pesticides (QCLot: 1735939)								
EP075-EM: alpha-BHC		319-84-6	0.5	µg/L	<0.5	10 µg/L	80.7	59 126
EP075-EM: Heptachlor		76-44-8	0.5	µg/L	<0.5	10 µg/L	81.3	59 131
EP075-EM: Aldrin		309-00-2	0.5	µg/L	<0.5	10 µg/L	79.7	59 133
EP075-EM: cis-Chlordane		5103-71-9	0.5	µg/L	<0.5	10 µg/L	81.3	61 133
EP075-EM: trans-Chlordane		5103-74-2	0.5	µg/L	<0.5	10 µg/L	85.6	60 132
EP075-EM: 4.4`-DDE		72-55-9	0.5	µg/L	<0.5	10 µg/L	86.1	56 130
EP075-EM: Dieldrin		60-57-1	0.5	µg/L	<0.5	10 µg/L	81.9	59 130
EP075-EM: 4.4`-DDD		72-54-8	0.5	µg/L	<0.5	10 µg/L	84.1	62 136
EP075-EM: 4.4`-DDT		50-29-3	0.5	µg/L	<0.5	10 µg/L	80.1	57 128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1735515)								
EP080: C6 - C9 Fraction		----	20	µg/L	<20	360 µg/L	90.1	68 125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1735843)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1735843) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	90.5	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	102	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	99.8	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1735515)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	87.7	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1735843)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	93.6	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	101	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	104	58	137
EP080: BTEXN (QCLot: 1735515)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	88.1	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	95.3	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	93.6	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	99.1	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	104	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	110	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1739372)							
EM1809613-005	NEL-EF-BH017_3.0m	EG005T: Arsenic	7440-38-2	50 mg/kg	93.5	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	90.5	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	94.9	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	90.9	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	82.2	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	92.2	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	81.2	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	94.2	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1739371)							
EM1809613-005	NEL-EF-BH017_3.0m	EG035T: Mercury	7439-97-6	5 mg/kg	97.8	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1739951)							
EM1809532-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	74.7	58	114



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1740462)							
EM1809532-002	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	91.2	77	113
EK040T: Fluoride Total (QCLot: 1735901)							
EM1809613-005	NEL-EF-BH017_3.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	94.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1735916)							
EM1809614-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	121	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1735906)							
EM1809613-005	NEL-EF-BH017_3.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	91.6	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	84.8	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1735906)							
EM1809613-005	NEL-EF-BH017_3.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	91.2	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	85.1	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	84.7	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1735914)							
EM1809613-005	NEL-EF-BH017_3.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	90.3	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	68.9	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	43.3	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1735914)							
EM1809613-005	NEL-EF-BH017_3.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	78.1	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	64.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1735914)							
EM1809613-005	NEL-EF-BH017_3.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	95.2	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	91.6	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1735906)							
EM1809613-005	NEL-EF-BH017_3.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	79.2	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1735915)							
EM1809614-002	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	88.1	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	101	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	92.7	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1735906)							
EM1809613-005	NEL-EF-BH017_3.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	75.4	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1735915)							
EM1809614-002	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	91.4	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	98.3	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	80.8	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1739115)							
EM1809532-020	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	94.0	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	94.3	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.1	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.7	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.4	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	94.9	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1739114)							
EM1809532-021	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	96.6	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1737214)							
EM1809532-021	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	102	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1742808)							
EM1809532-021	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	95.4	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1735705)							
EM1809575-001	Anonymous	EK040P: Fluoride	16984-48-8	50 mg/L	103	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1735516)							
EM1809613-003	FB201	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	96.2	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	85.2	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1735516)							
EM1809613-003	FB201	EP074: Chlorobenzene	108-90-7	20 µg/L	90.5	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1735515)							
EM1809613-003	FB201	EP080: C6 - C9 Fraction	----	280 µg/L	65.3	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1735515)							
EM1809613-003	FB201	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	63.5	44	122
EP080: BTEXN (QCLot: 1735515)							
EM1809613-003	FB201	EP080: Benzene	71-43-2	20 µg/L	87.1	68	130
		EP080: Toluene	108-88-3	20 µg/L	92.9	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1809613	Page	: 1 of 12
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 15-Jun-2018
Site	: North East Link - Contamination	Issue Date	: 25-Jun-2018
Sampler	: AS	No. of samples received	: 5
Order number	:	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- Duplicate outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EM1809685--032	Anonymous	Copper	7440-50-8	41.0 %	0% - 20%	RPD exceeds LOR based limits

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RB201,	FB201	----	----	19-Jun-2018	15-Jun-2018	4

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	9	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	15	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	15	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
NEL-EF-BH017 2.0m,	NEL-EF-BH017 3.0m	15-Jun-2018	21-Jun-2018	22-Jun-2018	✔	21-Jun-2018	21-Jun-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	----	----	----	19-Jun-2018	29-Jun-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	20-Jun-2018	12-Dec-2018	✓	20-Jun-2018	12-Dec-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	20-Jun-2018	13-Jul-2018	✓	22-Jun-2018	13-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	20-Jun-2018	13-Jul-2018	✓	20-Jun-2018	27-Jun-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	20-Jun-2018	29-Jun-2018	✓	21-Jun-2018	04-Jul-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	13-Jul-2018	✓	20-Jun-2018	13-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	22-Jun-2018	✓	21-Jun-2018	22-Jun-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	22-Jun-2018	✓	21-Jun-2018	22-Jun-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	22-Jun-2018	✓	21-Jun-2018	22-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH017_2.0m,	NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH017_2.0m, NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓	
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071-EM) NEL-EF-BH017_2.0m, NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓	
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH017_2.0m, NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	22-Jun-2018	✓	21-Jun-2018	22-Jun-2018	✓	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071-EM) NEL-EF-BH017_2.0m, NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓	
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH017_2.0m, NEL-EF-BH017_3.0m	15-Jun-2018	19-Jun-2018	22-Jun-2018	✓	21-Jun-2018	22-Jun-2018	✓	

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) RB201,	FB201	15-Jun-2018	----	----	----	19-Jun-2018	15-Jun-2018	✘
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Natural (EG020B-F) RB201,	FB201	15-Jun-2018	----	----	----	20-Jun-2018	12-Dec-2018	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F) RB201,	FB201	15-Jun-2018	----	----	----	25-Jun-2018	13-Jul-2018	✔
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB201,	FB201	15-Jun-2018	----	----	----	19-Jun-2018	13-Jul-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) RB201,	FB201	15-Jun-2018	----	----	----	21-Jun-2018	29-Jun-2018	✔
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB201,	FB201	15-Jun-2018	----	----	----	19-Jun-2018	13-Jul-2018	✔
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB201,	FB201	15-Jun-2018	20-Jun-2018	22-Jun-2018	✔	22-Jun-2018	30-Jul-2018	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB201,	FB201	15-Jun-2018	19-Jun-2018	29-Jun-2018	✔	20-Jun-2018	29-Jun-2018	✔



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB201,	FB201	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jun-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB201,	FB201	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jun-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB201,	FB201	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jun-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB201,	FB201	15-Jun-2018	20-Jun-2018	22-Jun-2018	✓	22-Jun-2018	30-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB201,	FB201	15-Jun-2018	20-Jun-2018	22-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB201,	FB201	15-Jun-2018	20-Jun-2018	22-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB201,	FB201	15-Jun-2018	20-Jun-2018	22-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB201,	FB201	15-Jun-2018	20-Jun-2018	22-Jun-2018	✓	22-Jun-2018	30-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB201, FB201	RB201,	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jun-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB201,	FB201	15-Jun-2018	20-Jun-2018	22-Jun-2018	✓	22-Jun-2018	30-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB201, FB201	RB201,	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jun-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) TB201, FB201	RB201,	15-Jun-2018	19-Jun-2018	29-Jun-2018	✓	20-Jun-2018	29-Jun-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	20	15.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	9	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	15	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	9	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	15	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1809614**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **AS, SH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **15**
No. of samples analysed : **9**

Page : 1 of 19
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 15-Jun-2018 16:15
Date Analysis Commenced : 18-Jun-2018
Issue Date : 25-Jun-2018 15:28



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH101_0.5	NEL-BH101_1.0	NEL-EF-BH015_0.5	NEL-EF-BH015_1.0	NEL-EF-BH018_0.2
Client sampling date / time					14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809614-002	EM1809614-003	EM1809614-006	EM1809614-007	EM1809614-009
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		5.0	5.4	7.3	7.3	6.0
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		20.2	19.2	23.4	18.8	14.6
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	5	6	<5	6
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		14	<5	15	10	7
Lead	7439-92-1	5	mg/kg		12	13	24	16	27
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		20	8	24	11	<2
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		23	9	42	19	9
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		610	200	500	250	140
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH101_0.5	NEL-BH101_1.0	NEL-EF-BH015_0.5	NEL-EF-BH015_1.0	NEL-EF-BH018_0.2
Client sampling date / time					14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809614-002	EM1809614-003	EM1809614-006	EM1809614-007	EM1809614-009
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH101_0.5	NEL-BH101_1.0	NEL-EF-BH015_0.5	NEL-EF-BH015_1.0	NEL-EF-BH018_0.2
Client sampling date / time				14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809614-002	EM1809614-003	EM1809614-006	EM1809614-007	EM1809614-009
				Result	Result	Result	Result	Result

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH101_0.5	NEL-BH101_1.0	NEL-EF-BH015_0.5	NEL-EF-BH015_1.0	NEL-EF-BH018_0.2
Client sampling date / time				14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1809614-002	EM1809614-003	EM1809614-006	EM1809614-007	EM1809614-009
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH101_0.5	NEL-BH101_1.0	NEL-EF-BH015_0.5	NEL-EF-BH015_1.0	NEL-EF-BH018_0.2
Client sampling date / time					14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1809614-002	EM1809614-003	EM1809614-006	EM1809614-007	EM1809614-009
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		106	98.9	111	108	110
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		62.3	62.0	80.3	74.2	79.6
Toluene-D8	2037-26-5	0.1	%		59.9	63.2	77.0	74.4	78.6
4-Bromofluorobenzene	460-00-4	0.1	%		59.8	65.0	76.5	74.6	76.1
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		99.4	87.6	92.4	99.7	101
2-Chlorophenol-D4	93951-73-6	0.025	%		79.6	78.9	79.6	85.9	89.0
2,4,6-Tribromophenol	118-79-6	0.025	%		93.9	84.0	92.9	90.1	96.8
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		87.7	79.3	83.2	88.8	90.6
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		83.8	77.3	81.0	86.1	87.4
2-Fluorobiphenyl	321-60-8	0.025	%		99.1	95.7	94.3	99.2	101
Anthracene-d10	1719-06-8	0.025	%		105	101	103	105	109
4-Terphenyl-d14	1718-51-0	0.025	%		121	115	119	120	125



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-EF-BH018_0.5	----	----	----	----
Client sampling date / time				14-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1809614-010	-----	-----	-----	-----
Result				----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	5.5	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	22.9	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	11	----	----	----	----
Lead	7439-92-1	5	mg/kg	11	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	13	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	8	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	500	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH018_0.5	----	----	----	----
Client sampling date / time				14-Jun-2018 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1809614-010	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	----	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	----	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	----	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	----	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	----	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	----	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	----	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	----	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	----	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH018_0.5	----	----	----	----
				Client sampling date / time	14-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809614-010	-----	-----	-----	-----
					Result	----	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH018_0.5	----	----	----	----
Client sampling date / time					14-Jun-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1809614-010	-----	-----	-----	-----
				Result		----	----	----	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH018_0.5	----	----	----	----
Client sampling date / time				14-Jun-2018 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1809614-010	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	110	----	----	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	78.4	----	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	76.1	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	72.1	----	----	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%	95.4	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%	82.7	----	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%	91.7	----	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%	84.7	----	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	83.5	----	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%	93.1	----	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%	106	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%	122	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB120	FB120	TB120	----	----
Client sampling date / time					14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809614-013	EM1809614-014	EM1809614-015	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		5.28	5.06	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L		<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB120	FB120	TB120	----	----
Client sampling date / time					14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809614-013	EM1809614-014	EM1809614-015	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB120	FB120	TB120	----	----
Client sampling date / time				14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809614-013	EM1809614-014	EM1809614-015	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB120	FB120	TB120	----	----
Client sampling date / time					14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809614-013	EM1809614-014	EM1809614-015	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		77.0	94.2	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		93.8	92.4	----	----	----
Toluene-D8	2037-26-5	5	%		86.3	83.7	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		96.4	97.2	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		12.1	25.8	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		32.8	65.3	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		57.4	77.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		49.4	77.4	----	----	----
Anthracene-d10	1719-06-8	1.0	%		68.2	97.7	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		99.2	116	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB120	FB120	TB120	----	----
Client sampling date / time					14-Jun-2018 00:00	14-Jun-2018 00:00	14-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809614-013	EM1809614-014	EM1809614-015	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		35.5	41.3	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		96.4	109	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		74.0	86.8	----	----	----
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	0.25	%		94.3	103	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		94.3	108	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		95.5	110	----	----	----
Anthracene-d10	1719-06-8	0.25	%		113	111	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		126	137	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		95.4	94.3	95.2	----	----
Toluene-D8	2037-26-5	2	%		84.7	82.2	85.4	----	----
4-Bromofluorobenzene	460-00-4	2	%		102	103	105	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Page 1 of 1

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format																			
Project North East Link - Contamination		Contact Email David.Quinn@ghd.com		Address: 2 - 4 Westall Rd, Springvale																					
GHD Contact David Quinn		Quote No./GHD Reference ME/124/18		Lab Contact: Shirley LeCornu																					
Standard TAT																									
Sample I.D.	Date	Time	Composite Sample	Sample Matrix S: Soil BL Sludge W: Water A: Air GW: Groundwater	Preservative	Type J: soil jar B: bag V: vial G: glass bottle P: plastic bottle	Number	Volume (mL)	HOLD	Analyses Required															
1 NEL-BH01-0.2m	14/6/18	AM	/	S	/	J	1	250	X																
2 " " -0.5m	14/6/18	AM	/	S	/	J	1	250	X																
3 " " -1.0m	14/6/18	AM	/	S	/	J	1	250	X																
4 " " -1.5m	14/6/18	AM	/	S	/	J	1	250	X																
5 NEL-EF-BH015.02	14/6/18	AM	/	S	/	J	1	250	X																
6 " " " -0.5	14/6/18	AM	/	S	/	J	1	250	X																
7 " " " -1.0	14/6/18	AM	/	S	/	J	1	250	X																
8 " " " -1.50	14/6/18	AM	/	S	/	J	1	250	X																
9 NEL-EF-BH018-0.2	14/6/18	AM	/	S	/	J	1	250	X																
10 " " " -0.5	14/6/18	AM	/	S	/	J	1	250	X																
11 " " " -1.0	14/6/18	AM	/	S	/	J	1	250	X																
12 " " " -1.5	14/6/18	AM	/	S	/	J	1	250	X																
13 RB120	14/6/18	AM	/	W	/	VGP	8	/	X																
14 FB120	14/6/18	AM	/	W	/	VGP	8	/	X																
15 TB120	14/6/18	AM	/	W	/	V	1	/	X																

Environmental Division
Melbourne

Work Order Reference
EM1809614



Telephone : + 61-3-8649 9600

Sampled by:	S.H + A.S.	Date/Time:	AM 14/6/18	Relinquished by:	S.H + A.S.	Date/Time:	PM 14/6/18
Received by:	Conashed Fridge	Date/Time:	PM 14/6/18	Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Mark Davidson	Date/Time:	15/6 1615	Relinquished by:		Date/Time:	
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 18 June 2018 10:23 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: EM1809613, EM1809614 - GHD - 31350060910
Attachments: EM1809613.pdf; EM1809614.pdf

Hi Shirley,

Please analyse the following at standard TAT:

EM1809613:

TB201 = Volatile TPH/BTEX
RB201 = IWRG621 water equivalent
FB201 = IWRG621 water equivalent

NEL-EF-BH017_2.0m = IWRG621
NEL-EF-BH017_3.0m = IWRG621

EM1809614:

NEL-BH101_0.5m = IWRG621
NEL-BH101_1.0m = IWRG621

NEL-EF-BH015_0.5m = IWRG621
NEL-EF-BH015_1.0m = IWRG621

NEL-EF-BH018_0.2m = IWRG621
NEL-EF-BH018_0.5m = IWRG621

RB120 = IWRG621 water equivalent
FB120 = IWRG621 water equivalent
TB120 = Volatile TPH/BTEX

Regards,

Kory Auch
Contamination Assessment & Remediation

GHD

Proudly employee owned

T: +61 3 8687 8948 | V: 318948 | M: +61 0478 797 000 | E: kory.auch@ghd.com
Level 18, 180 Lonsdale Street Melbourne Victoria 3000 Australia | www.ghd.com

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Please consider our environment before printing this email

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1809614**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 4
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: AS, SH		

Dates

Date Samples Received	: 15-Jun-2018 16:15	Issue Date	: 18-Jun-2018
Client Requested Due Date	: 25-Jun-2018	Scheduled Reporting Date	: 25-Jun-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 2.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 15 / 9

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB120	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB120	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB120	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB120	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB120	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB120	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1809614-001	14-Jun-2018 00:00	NEL-BH101_0.2	✓		
EM1809614-002	14-Jun-2018 00:00	NEL-BH101_0.5		✓	✓
EM1809614-003	14-Jun-2018 00:00	NEL-BH101_1.0		✓	✓
EM1809614-004	14-Jun-2018 00:00	NEL-BH101_1.5	✓		
EM1809614-005	14-Jun-2018 00:00	NEL-EF-BH015_0.2	✓		
EM1809614-006	14-Jun-2018 00:00	NEL-EF-BH015_0.5		✓	✓
EM1809614-007	14-Jun-2018 00:00	NEL-EF-BH015_1.0		✓	✓
EM1809614-008	14-Jun-2018 00:00	NEL-EF-BH015_1.5	✓		
EM1809614-009	14-Jun-2018 00:00	NEL-EF-BH018_0.2		✓	✓
EM1809614-010	14-Jun-2018 00:00	NEL-EF-BH018_0.5		✓	✓
EM1809614-011	14-Jun-2018 00:00	NEL-EF-BH018_1.0	✓		
EM1809614-012	14-Jun-2018 00:00	NEL-EF-BH018_1.5	✓		



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1809614-013	14-Jun-2018 00:00	RB120	✓	
EM1809614-014	14-Jun-2018 00:00	FB120	✓	
EM1809614-015	14-Jun-2018 00:00	TB120		✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator							
FB120	Clear Plastic Bottle - Natural	----	14-Jun-2018	15-Jun-2018	✗	18-Jun-2018	✗
RB120	Clear Plastic Bottle - Natural	----	14-Jun-2018	15-Jun-2018	✗	18-Jun-2018	✗

ALL ACCOUNTS

Email ap-fss@ghd.com

Email david.quinn@ghd.com

- [illegible]

Email GHDLabreports@ghd.com

- [illegible]

Email kory.auch@ghd.com

- [illegible]

QUALITY CONTROL REPORT

Work Order	: EM1809614	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 15-Jun-2018
Order number	: ----	Date Analysis Commenced	: 18-Jun-2018
C-O-C number	: ----	Issue Date	: 25-Jun-2018
Sampler	: AS, SH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 15		
No. of samples analysed	: 9		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1739264)									
EM1809614-002	NEL-BH101_0.5	EA001: pH (CaCl ₂)	----	0.1	pH Unit	5.0	4.9	2.02	0% - 20%
EM1809674-004	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.8	7.8	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1734594)									
EM1809614-002	NEL-BH101_0.5	EA055: Moisture Content	----	0.1	%	20.2	20.7	2.68	0% - 20%
EM1809686-005	Anonymous	EA055: Moisture Content	----	0.1	%	25.7	25.3	1.80	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1739879)									
EM1809560-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	67	69	3.19	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	45	46	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	108	102	5.30	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	35	32	7.63	No Limit
EM1809614-006	NEL-EF-BH015_0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	24	24	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	8	27.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	15	15	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	24	37	44.1	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1739879) - continued									
EM1809614-006	NEL-EF-BH015_0.5	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	42	39	6.47	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1739880)									
EM1809560-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.00	No Limit
EM1809614-006	NEL-EF-BH015_0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1739951)									
EM1809532-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809532-016	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1740462)									
EM1809532-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809532-016	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1734385)									
EM1809592-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	260	250	6.25	No Limit
EM1809592-020	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	160	150	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1735916)									
EM1809613-004	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809719-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1734310)									
EM1809614-002	NEL-BH101_0.5	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809667-037	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1734310)									
EM1809614-002	NEL-BH101_0.5	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1809667-037	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1734310)									
EM1809614-002	NEL-BH101_0.5	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1734310) - continued									
EM1809614-002	NEL-BH101_0.5	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1809667-037	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1735914)							
EM1809613-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1735914) - continued									
EM1809613-004	Anonymous	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1809719-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1735914)									
EM1809613-004	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1809719-003	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EM1809613-004	Anonymous	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1735914)									
EM1809613-004	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1735914) - continued									
EM1809613-004	Anonymous	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809719-003	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1735914)									
EM1809613-004	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1735914) - continued									
EM1809613-004	Anonymous	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EM1809719-003	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1734310)									
EM1809614-002	NEL-BH101_0.5	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1809667-037	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1735915)									
EM1809613-004	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809719-003	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

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 Work Order : EM1809614
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1735915) - continued									
EM1809719-003	Anonymous	EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1734310)									
EM1809614-002	NEL-BH101_0.5	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1809667-037	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1735915)									
EM1809613-004	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809719-003	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1735709)									
EM1809597-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.70	7.67	0.390	0% - 20%
EM1809617-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.65	6.63	0.301	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1739113)									
EM1809762-003	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	0.001	<0.001	0.00	No Limit
EM1809532-020	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1739115)									
EM1809635-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.007	0.008	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.050	0.050	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809532-020	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit

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 Work Order : EM1809614
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1735515) - continued									
EM1809662-060	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1809613-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1735515)									
EM1809662-060	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1809613-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1735515)									
EM1809662-060	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1809613-002	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1739879)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	88.0	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	86.1	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	87.7	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	84.7	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	91.5	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	100	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.2	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	90.6	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	92.2	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1739880)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	86.4	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1739951)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	102	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1740462)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	91.3	80	110
EK040T: Fluoride Total (QCLot: 1734385)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	89.5	77	106
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1735916)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	117	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1734310)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	91.1	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	91.4	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	91.2	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	89.4	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	91.2	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	88.6	74	114
EP074H: Naphthalene (QCLot: 1734310)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	91.8	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1734310)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	88.3	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	88.5	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1734310) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	89.8	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	86.3	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	90.7	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	87.7	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	98.8	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	90.2	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	95.9	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	93.0	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	99.3	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	83.6	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	96.4	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	93.0	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	86.2	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	91.0	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	92.9	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	91.8	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	89.4	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1735914)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	99.3	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	87.5	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	93.7	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	84.0	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	89.8	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	80.7	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	98.4	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	100	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	86.9	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1735914)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	87.1	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	97.2	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	91.8	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	85.8	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	101	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	91.0	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	93.0	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	89.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	106	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	91.8	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1735914)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	100	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	104	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	96.5	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	105	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	106	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	71.2	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	108	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	110	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	102	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	112	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	112	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	106	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	111	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	111	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	108	55	137
EP075I: Organochlorine Pesticides (QCLot: 1735914)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	105	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	106	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	106	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	107	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	104	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	104	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	107	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	111	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	117	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	112	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	116	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	109	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	108	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	167	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	92.6	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	110	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	115	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	113	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	104	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	104	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1734310)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	80.1	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1739113)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	94.8	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1739115)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.4	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.0	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.1	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	96.5	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	100.0	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1739114)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.1	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1737214)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	105	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1742808)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	93.3	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1735705)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1735841)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	86.4	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1735516)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1735516) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	94.9	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1735516)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	84.2	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	100	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	96.6	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	89.2	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	92.2	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	85.2	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	85.8	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	97.1	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	87.4	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	101	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	86.2	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	91.0	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	106	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	88.3	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1735516)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	92.3	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	94.2	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	98.4	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	90.2	62	119
EP074G: Trihalomethanes (QCLot: 1735516)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	93.9	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1735842)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	67.1	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	70.6	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	71.5	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	74.1	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	78.1	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	92.0	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	85.9	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	84.5	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	88.1	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	83.8	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	86.9	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	84.0	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	86.0	56	126

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

CAS Number

LOR

Unit

Result

Concentration

LCS

Low

High

EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	83.8	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	82.2	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	84.2	53	125

EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	86.5	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	70.2	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	78.8	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	70.6	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	76.5	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	67.9	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	78.8	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	80.8	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	72.8	22	122

EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	31.0	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	76.2	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	61.4	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	71.0	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	88.2	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	110	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	33.3	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	83.2	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	96.0	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	91.1	32	135

EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	80.7	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	81.3	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	79.7	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	81.3	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	85.6	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	86.1	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	81.9	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	84.1	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	80.1	57	128

EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	90.1	68	125
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EP080/071: Total Petroleum Hydrocarbons (QCLot: 1735843)



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1735843) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	90.5	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	102	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	99.8	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1735515)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	87.7	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1735843)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	93.6	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	101	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	104	58	137
EP080: BTEXN (QCLot: 1735515)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	88.1	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	95.3	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	93.6	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	99.1	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	104	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	110	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1739879)							
EM1809611-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	101	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	88.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	99.5	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	90.5	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	97.6	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	89.5	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	90.7	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	78.8	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1739880)							
EM1809611-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	76.2	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1739951)							
EM1809532-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	74.7	58	114



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1740462)							
EM1809532-002	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	91.2	77	113
EK040T: Fluoride Total (QCLot: 1734385)							
EM1809592-004	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	95.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1735916)							
EM1809614-003	NEL-BH101_1.0	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	121	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1734310)							
EM1809614-003	NEL-BH101_1.0	EP074-UT: Benzene	71-43-2	2 mg/kg	89.8	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	88.8	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1734310)							
EM1809614-003	NEL-BH101_1.0	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	96.4	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	88.8	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	88.7	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1735914)							
EM1809613-005	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	90.3	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	68.9	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	43.3	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1735914)							
EM1809613-005	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	78.1	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	64.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1735914)							
EM1809613-005	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	95.2	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	91.6	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1734310)							
EM1809614-003	NEL-BH101_1.0	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	64.9	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1735915)							
EM1809614-002	NEL-BH101_0.5	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	88.1	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	101	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	92.7	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1734310)							
EM1809614-003	NEL-BH101_1.0	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	64.5	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1735915)							
EM1809614-002	NEL-BH101_0.5	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	91.4	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	98.3	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	80.8	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			

Page : 19 of 19
 Work Order : EM1809614
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1739115)							
EM1809532-020	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	94.0	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	94.3	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.1	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.7	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.4	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	94.9	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1739114)							
EM1809532-021	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	96.6	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1737214)							
EM1809532-021	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	102	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1742808)							
EM1809532-021	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	95.4	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1735705)							
EM1809575-001	Anonymous	EK040P: Fluoride	16984-48-8	50 mg/L	103	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1735516)							
EM1809613-003	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	96.2	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	85.2	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1735516)							
EM1809613-003	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	90.5	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1735515)							
EM1809613-003	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	65.3	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1735515)							
EM1809613-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	63.5	44	122
EP080: BTEXN (QCLot: 1735515)							
EM1809613-003	Anonymous	EP080: Benzene	71-43-2	20 µg/L	87.1	68	130
		EP080: Toluene	108-88-3	20 µg/L	92.9	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1809614	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 15-Jun-2018
Site	: ----	Issue Date	: 25-Jun-2018
Sampler	: AS, SH	No. of samples received	: 15
Order number	:	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

Sub-Matrix: **WATER**

Outliers : Analysis Holding Time Compliance

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
RB120,	FB120	----	----	----	19-Jun-2018	14-Jun-2018	5

Matrix: WATER

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	9	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	15	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	15	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: SOIL

Evaluation: ✖ = Holding time breach : ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)		14-Jun-2018	20-Jun-2018	21-Jun-2018	✓	20-Jun-2018	20-Jun-2018	✓
NEL-BH101_0.5,	NEL-BH101_1.0,							
NEL-EF-BH015_0.5,	NEL-EF-BH015_1.0,							
NEL-EF-BH018_0.2,	NEL-EF-BH018_0.5							
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		14-Jun-2018	----	----	----	18-Jun-2018	28-Jun-2018	✓
NEL-BH101_0.5,	NEL-BH101_1.0,							
NEL-EF-BH015_0.5,	NEL-EF-BH015_1.0,							
NEL-EF-BH018_0.2,	NEL-EF-BH018_0.5							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)		14-Jun-2018	21-Jun-2018	11-Dec-2018	✓	21-Jun-2018	11-Dec-2018	✓
NEL-BH101_0.5,	NEL-BH101_1.0,							
NEL-EF-BH015_0.5,	NEL-EF-BH015_1.0,							
NEL-EF-BH018_0.2,	NEL-EF-BH018_0.5							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)		14-Jun-2018	21-Jun-2018	12-Jul-2018	✓	22-Jun-2018	12-Jul-2018	✓
NEL-BH101_0.5,	NEL-BH101_1.0,							
NEL-EF-BH015_0.5,	NEL-EF-BH015_1.0,							
NEL-EF-BH018_0.2,	NEL-EF-BH018_0.5							
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)		14-Jun-2018	20-Jun-2018	12-Jul-2018	✓	20-Jun-2018	27-Jun-2018	✓
NEL-BH101_0.5,	NEL-BH101_1.0,							
NEL-EF-BH015_0.5,	NEL-EF-BH015_1.0,							
NEL-EF-BH018_0.2,	NEL-EF-BH018_0.5							
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)		14-Jun-2018	20-Jun-2018	28-Jun-2018	✓	21-Jun-2018	04-Jul-2018	✓
NEL-BH101_0.5,	NEL-BH101_1.0,							
NEL-EF-BH015_0.5,	NEL-EF-BH015_1.0,							
NEL-EF-BH018_0.2,	NEL-EF-BH018_0.5							
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)		14-Jun-2018	18-Jun-2018	12-Jul-2018	✓	20-Jun-2018	12-Jul-2018	✓
NEL-BH101_0.5,	NEL-BH101_1.0,							
NEL-EF-BH015_0.5,	NEL-EF-BH015_1.0,							
NEL-EF-BH018_0.2,	NEL-EF-BH018_0.5							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)		14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓
NEL-BH101_0.5,	NEL-BH101_1.0,							
NEL-EF-BH015_0.5,	NEL-EF-BH015_1.0,							
NEL-EF-BH018_0.2,	NEL-EF-BH018_0.5							



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH101_0.5, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2,	NEL-BH101_1.0, NEL-EF-BH015_1.0, NEL-EF-BH018_0.5	14-Jun-2018	18-Jun-2018	21-Jun-2018	✓	20-Jun-2018	21-Jun-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH101_0.5, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2,	NEL-BH101_1.0, NEL-EF-BH015_1.0, NEL-EF-BH018_0.5	14-Jun-2018	18-Jun-2018	21-Jun-2018	✓	20-Jun-2018	21-Jun-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH101_0.5, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2,	NEL-BH101_1.0, NEL-EF-BH015_1.0, NEL-EF-BH018_0.5	14-Jun-2018	18-Jun-2018	21-Jun-2018	✓	20-Jun-2018	21-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH101_0.5, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2,	NEL-BH101_1.0, NEL-EF-BH015_1.0, NEL-EF-BH018_0.5	14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH101_0.5, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2,	NEL-BH101_1.0, NEL-EF-BH015_1.0, NEL-EF-BH018_0.5	14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH101_0.5, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2,	NEL-BH101_1.0, NEL-EF-BH015_1.0, NEL-EF-BH018_0.5	14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH101_0.5, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2,	NEL-BH101_1.0, NEL-EF-BH015_1.0, NEL-EF-BH018_0.5	14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	29-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons									
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH101_0.5, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2,		NEL-BH101_1.0, NEL-EF-BH015_1.0, NEL-EF-BH018_0.5	14-Jun-2018	18-Jun-2018	21-Jun-2018	✔	20-Jun-2018	21-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH101_0.5, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2,		NEL-BH101_1.0, NEL-EF-BH015_1.0, NEL-EF-BH018_0.5	14-Jun-2018	19-Jun-2018	28-Jun-2018	✔	20-Jun-2018	29-Jul-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH101_0.5, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2,		NEL-BH101_1.0, NEL-EF-BH015_1.0, NEL-EF-BH018_0.5	14-Jun-2018	18-Jun-2018	21-Jun-2018	✔	20-Jun-2018	21-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH101_0.5, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2,		NEL-BH101_1.0, NEL-EF-BH015_1.0, NEL-EF-BH018_0.5	14-Jun-2018	19-Jun-2018	28-Jun-2018	✔	20-Jun-2018	29-Jul-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	RB120, FB120	14-Jun-2018	----	----	----	19-Jun-2018	14-Jun-2018	✘
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)	RB120, FB120	14-Jun-2018	----	----	----	20-Jun-2018	11-Dec-2018	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)	RB120, FB120	14-Jun-2018	----	----	----	25-Jun-2018	28-Jun-2018	✔
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	RB120, FB120	14-Jun-2018	----	----	----	19-Jun-2018	12-Jul-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)	RB120, FB120	14-Jun-2018	----	----	----	21-Jun-2018	28-Jun-2018	✔
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	RB120, FB120	14-Jun-2018	----	----	----	19-Jun-2018	12-Jul-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066) RB120, FB120	14-Jun-2018	20-Jun-2018	21-Jun-2018	✓	22-Jun-2018	30-Jul-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074) RB120, FB120	14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	28-Jun-2018	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) RB120, FB120	14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	28-Jun-2018	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) RB120, FB120	14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	28-Jun-2018	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074) RB120, FB120	14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	28-Jun-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB120, FB120	14-Jun-2018	20-Jun-2018	21-Jun-2018	✓	22-Jun-2018	30-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) RB120, FB120	14-Jun-2018	20-Jun-2018	21-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) RB120, FB120	14-Jun-2018	20-Jun-2018	21-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075-EM) RB120, FB120	14-Jun-2018	20-Jun-2018	21-Jun-2018	✓	21-Jun-2018	30-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) RB120, FB120	14-Jun-2018	20-Jun-2018	21-Jun-2018	✓	22-Jun-2018	30-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB120, FB120, TB120	14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	28-Jun-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) RB120, FB120	14-Jun-2018	20-Jun-2018	21-Jun-2018	✓	22-Jun-2018	30-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB120, FB120, TB120	14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	28-Jun-2018	✓



Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)	FB120,	14-Jun-2018	19-Jun-2018	28-Jun-2018	✓	20-Jun-2018	28-Jun-2018	✓
	TB120							



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	9	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	15	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	9	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	15	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1809655**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 14-May-2018 16:30
Date Analysis Commenced : 18-Jun-2018
Issue Date : 19-Jun-2018 16:05



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- This is a rebatch of EM1808252.

Page : 3 of 4
 Work Order : EM1809655
 Client : GHD PTY LTD
 Project : 31350060910



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

NEL-BH191_1.0m

Client sampling date / time

12-May-2018 00:00

Compound

CAS Number

LOR

Unit

EM1809655-001

Result

EG005C: Leachable Metals by ICPAES

Nickel

7440-02-0

0.1

mg/L

<0.1



Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Client sample ID

				NEL-BH191_1.0m	----	----	----	----
Client sampling date / time				12-May-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1809655-001	-----	-----	-----	-----
Result					----	----	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	7.3	----	----	----	----
After HCl pH	----	0.1	pH Unit	1.5	----	----	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	----	----	----	----
Final pH	----	0.1	pH Unit	4.9	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: EM1809655	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 14-May-2018
Order number	: ----	Date Analysis Commenced	: 18-Jun-2018
C-O-C number	: ----	Issue Date	: 19-Jun-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1736421)									
EM1809470-001	Anonymous	EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1809640-002	Anonymous	EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit		Result	Concentration	LCS	Low
EG005C: Leachable Metals by ICPAES (QCLot: 1736421)								
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	93.0	86	111

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1736421)							
EM1809470-005	Anonymous	EG005C: Nickel	7440-02-0	1 mg/L	95.0	88	116

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1809655	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 14-May-2018
Site	: ----	Issue Date	: 19-Jun-2018
Sampler	: ----	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH191 1.0m	12-May-2018	18-Jun-2018	08-Nov-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH191 1.0m	18-Jun-2018	19-Jun-2018	15-Dec-2018	✔	19-Jun-2018	15-Dec-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1809688**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 14-May-2018 16:30
Date Analysis Commenced : 19-Jun-2018
Issue Date : 21-Jun-2018 11:13



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Rebatch of EM1807877.



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				NEL-BH159_0.2m	----	----	----	----
Client sampling date / time				14-May-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1809688-001	-----	-----	-----	-----
				Result	----	----	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	----	----	----	----



Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Client sample ID

				NEL-BH159_0.2m	----	----	----	----
				Client sampling date / time	14-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1809688-001	-----	-----	-----	-----
				Result	----	----	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	7.6	----	----	----	----
After HCl pH	----	0.1	pH Unit	1.5	----	----	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	----	----	----	----
Final pH	----	0.1	pH Unit	4.9	----	----	----	----

Rebatch

Environmental Division
Melbourne

Work Order Reference
EM1809688



Telephone : + 61-3-8648 9800

Client / Client code: GHD

Project: 31350060910

Project Manger: DAVID QUINN

Date /time sample rec: 14/5 @ 4:30pm

Date/time Instructions rec: 15/6 @ 5:12pm

Due date: std

Due date surcharge:

CS Contact:

Shirley

Additional Information:

[illegible]

Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Friday, 15 June 2018 5:12 PM
To: Shirley LeCornu
Cc: Kory.Auch@ghd.com
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1808252 | Overall Description: North East Link - Contamination

Hi Shirley

Can I also please request a leachability test for:

EM1807877
NEL-BH159_0.2m – lead

Thanks

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance

GHD
Proudly employee owned
T: +61 3 8687 8627 | M: +61 437 227 626 | V: 318 627 | E: david.quinn@ghd.com
Level 18, 180 Lonsdale Street Melbourne VIC 3000 | www.ghd.com

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Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the *Inside Waste Consultants Review*

Please consider our environment before printing this email

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Friday, 15 June 2018 1:46 PM
To: David Quinn <David.Quinn@ghd.com>
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1808252 | Overall Description: North East Link - Contamination

Hi David

Looks like EM1807708

Kind regards

QUALITY CONTROL REPORT

Work Order	: EM1809688	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 14-May-2018
Order number	: ----	Date Analysis Commenced	: 19-Jun-2018
C-O-C number	: ----	Issue Date	: 21-Jun-2018
Sampler	: ----		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1739812)									
EM1809681-005	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1739812)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	98.2	88	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1739812)							
EM1809688-001	NEL-BH159_0.2m	EG005C: Lead	7439-92-1	1 mg/L	94.9	86	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1809688	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 14-May-2018
Site	: North East Link - Contamination	Issue Date	: 21-Jun-2018
Sampler	: ----	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH159 0.2m	14-May-2018	19-Jun-2018	10-Nov-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH159 0.2m	19-Jun-2018	20-Jun-2018	16-Dec-2018	✔	20-Jun-2018	16-Dec-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1809816**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **GHD**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **11**
No. of samples analysed : **7**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 19-Jun-2018 09:45
Date Analysis Commenced : 22-Jun-2018
Issue Date : 28-Jun-2018 10:31



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH203_0.5m	NEL-BH203_1.5m	NEL-BH204_0.5m	NEL-BH204_1.5m	----
Client sampling date / time					18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1809816-002	EM1809816-004	EM1809816-006	EM1809816-008	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.1	6.9	7.3	7.1	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		8.8	21.0	16.8	21.3	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	10	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		6	8	20	12	----
Lead	7439-92-1	5	mg/kg		10	15	28	15	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		7	10	31	16	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		13	38	48	31	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		230	250	300	240	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH203_0.5m	NEL-BH203_1.5m	NEL-BH204_0.5m	NEL-BH204_1.5m	----
Client sampling date / time					18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1809816-002	EM1809816-004	EM1809816-006	EM1809816-008	-----
					Result	Result	Result	Result	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH203_0.5m	NEL-BH203_1.5m	NEL-BH204_0.5m	NEL-BH204_1.5m	----
Client sampling date / time				18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	----	
Compound	CAS Number	LOR	Unit	EM1809816-002	EM1809816-004	EM1809816-006	EM1809816-008	-----	
				Result	Result	Result	Result	----	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	----	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	----	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	----	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	----	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	----	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	----	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	----	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH203_0.5m	NEL-BH203_1.5m	NEL-BH204_0.5m	NEL-BH204_1.5m	----
Client sampling date / time					18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1809816-002	EM1809816-004	EM1809816-006	EM1809816-008	-----
					Result	Result	Result	Result	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH203_0.5m	NEL-BH203_1.5m	NEL-BH204_0.5m	NEL-BH204_1.5m	----
Client sampling date / time					18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1809816-002	EM1809816-004	EM1809816-006	EM1809816-008	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		84.9	87.6	85.3	86.9	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		71.2	69.8	73.7	66.2	----
Toluene-D8	2037-26-5	0.1	%		74.1	72.7	78.6	63.2	----
4-Bromofluorobenzene	460-00-4	0.1	%		83.4	82.7	93.8	73.9	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		92.5	101	96.4	95.2	----
2-Chlorophenol-D4	93951-73-6	0.025	%		75.6	80.0	76.0	75.8	----
2,4,6-Tribromophenol	118-79-6	0.025	%		87.0	88.5	86.6	81.0	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		85.4	87.2	83.2	82.0	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		87.3	94.1	85.0	84.3	----
2-Fluorobiphenyl	321-60-8	0.025	%		96.4	95.4	95.2	93.8	----
Anthracene-d10	1719-06-8	0.025	%		96.8	99.3	98.8	96.7	----
4-Terphenyl-d14	1718-51-0	0.025	%		115	117	113	113	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB121	FB121	RB121	----	----
Client sampling date / time				18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809816-009	EM1809816-010	EM1809816-011	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	5.40	5.30	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	----	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L	----	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	----	<0.01	<0.01	----	----
Tin	7440-31-5	0.001	mg/L	----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	----	<0.005	<0.005	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	----	<0.01	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	----	<0.004	<0.004	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	----	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	----	<1	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	----	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	----	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	----	<5	<5	----	----
Methylene chloride	75-09-2	5	µg/L	----	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	----	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	----	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	----	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	----	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	----	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L	----	<5	<5	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB121	FB121	RB121	----	----
Client sampling date / time				18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809816-009	EM1809816-010	EM1809816-011	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	----	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	----	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	----	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	----	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	----	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	----	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	----	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	----	<5	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	----	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	----	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	----	<2	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	----	<2	<2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				TB121	FB121	RB121	----	----
Client sampling date / time				18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809816-009	EM1809816-010	EM1809816-011	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	----	<2	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	----	<4	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	----	<2	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	----	<2	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	----	<2	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	----	<2	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	----	<2	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	----	<4	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	----	<4	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	----	<4	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	----	<4	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	----	<4	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	----	<100	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	----	<50	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	----	<50	<50	----	----
Dinoseb	88-85-7	50	µg/L	----	<50	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	----	<50	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	----	<0.5	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	----	<0.5	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	----	<0.5	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	<0.5	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	----	<0.5	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB121	FB121	RB121	----	----
Client sampling date / time					18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809816-009	EM1809816-010	EM1809816-011	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		----	68.5	82.8	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		----	103	102	----	----
Toluene-D8	2037-26-5	5	%		----	111	109	----	----
4-Bromofluorobenzene	460-00-4	5	%		----	120	117	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	24.7	30.4	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	62.7	81.0	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	63.2	75.4	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	67.8	91.2	----	----
Anthracene-d10	1719-06-8	1.0	%		----	76.6	96.5	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	86.9	105	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB121	FB121	RB121	----	----
Client sampling date / time					18-Jun-2018 00:00	18-Jun-2018 00:00	18-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809816-009	EM1809816-010	EM1809816-011	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		----	23.8	18.3	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		----	76.3	49.8	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		----	75.2	56.2	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		----	81.8	52.1	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		----	85.4	54.2	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		----	92.7	63.9	----	----
Anthracene-d10	1719-06-8	0.25	%		----	95.6	70.1	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		----	107	80.9	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		114	111	110	----	----
Toluene-D8	2037-26-5	2	%		108	104	102	----	----
4-Bromofluorobenzene	460-00-4	2	%		106	106	100	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		<i>Recovery Limits (%)</i>	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Wednesday, 20 June 2018 7:31 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: EM1809816 - GHD - 31350060910
Attachments: 20062018094010-0001.pdf

Hi Shirley,

Please analyse the following at standard TAT:

EM1809816:

- 2 NEL-BH203_0.5m = IWRG621
- 4 NEL-BH203_1.5m = IWRG621
- 6 NEL-BH204_0.5m = IWRG621
- 8 NEL-BH204_1.5m = IWRG621
- 9 TB121 = Volatile TPH/BTEX
- 10 FB121 = IWRG621 water equivalent
- 11 RB121 = IWRG621 water equivalent

Regards,

Kory Auch

GHD

T: 03 8687 8948 | **V:** 318948 | **M:** 0478 797 000 | **E:** kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>

Sent: Wednesday, 20 June 2018 12:06 PM

To: Kory Auch <Kory.Auch@ghd.com>; David Quinn <David.Quinn@ghd.com>

Subject: FW: EM1809816 - GHD - 31350060910

Hi David & Kory

Please let me know analysis required for the attached, when you get a chance.

Thanks

Shirley

Shirley LeCornu

Client Services Officer – Springvale
Environmental

QUALITY CONTROL REPORT

Work Order	: EM1809816	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 19-Jun-2018
Order number	: ----	Date Analysis Commenced	: 22-Jun-2018
C-O-C number	: ----	Issue Date	: 28-Jun-2018
Sampler	: GHD		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 11		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1750306)									
EM1809816-002	NEL-BH203_0.5m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.1	7.0	1.42	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1747892)									
EM1809816-002	NEL-BH203_0.5m	EA055: Moisture Content	----	0.1	%	8.8	8.6	2.77	No Limit
EM1809977-001	Anonymous	EA055: Moisture Content	----	0.1	%	24.0	24.7	3.07	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1750546)									
EM1809937-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	64	71	10.6	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	85	66	25.3	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	14	13	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	69	48	35.0	0% - 50%
EM1809816-002	NEL-BH203_0.5m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	7	7	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	10	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit

Page : 3 of 19
 Work Order : EM1809816
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1750546) - continued									
EM1809816-002	NEL-BH203_0.5m	EG005T: Zinc	7440-66-6	5	mg/kg	13	13	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1750545)									
EM1809816-002	NEL-BH203_0.5m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809937-024	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1751059)									
EM1809816-002	NEL-BH203_0.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809937-024	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1754796)									
EM1809816-002	NEL-BH203_0.5m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1810018-003	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1750429)									
EM1809816-002	NEL-BH203_0.5m	EK040T: Fluoride	16984-48-8	40	mg/kg	230	210	7.27	No Limit
EM1809952-049	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	220	250	13.6	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1750331)									
EM1809816-002	NEL-BH203_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1809978-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1747822)									
EM1809816-002	NEL-BH203_0.5m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809961-003	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP074H: Naphthalene (QC Lot: 1747822)									
EM1809816-002	NEL-BH203_0.5m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1809961-003	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1747822)									
EM1809816-002	NEL-BH203_0.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1747822) - continued									
EM1809816-002	NEL-BH203_0.5m	EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1809961-003	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1750329)							
EM1809816-002	NEL-BH203_0.5m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1750329) - continued									
EM1809816-002	NEL-BH203_0.5m	EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1809978-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1750329)							
EM1809816-002	NEL-BH203_0.5m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1809978-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1750329)									
EM1809816-002	NEL-BH203_0.5m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1750329) - continued									
EM1809816-002	NEL-BH203_0.5m	EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EM1809978-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5
EP075-EM: Acenaphthene	83-32-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Acenaphthylene	208-96-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Fluorene	86-73-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Phenanthrene	85-01-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Anthracene	120-12-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Fluoranthene	206-44-0			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Pyrene	129-00-0			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benz(a)anthracene	56-55-3			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Chrysene	218-01-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
	207-08-9								
EP075-EM: Benzo(a)pyrene	50-32-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(g.h.i)perylene	191-24-2			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1750329)									
EM1809816-002	NEL-BH203_0.5m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1750329) - continued									
EM1809816-002	NEL-BH203_0.5m	EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1809978-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1747822)									
EM1809816-002	NEL-BH203_0.5m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1809961-003	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1750330)									
EM1809816-002	NEL-BH203_0.5m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809978-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

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 Work Order : EM1809816
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1747822)									
EM1809816-002	NEL-BH203_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1809961-003	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1750330)									
EM1809816-002	NEL-BH203_0.5m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809978-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1750069)									
EM1809771-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.32	6.30	0.380	0% - 20%
EM1809940-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.68	7.65	0.391	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1750139)									
EM1809816-010	FB121	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1750141)									
EM1809926-008	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.109	0.111	1.70	0% - 20%
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.011	0.012	0.00	0% - 50%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.798	0.789	1.21	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.793	0.792	0.182	0% - 20%
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.009	0.008	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	52.1	51.7	0.802	0% - 20%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809816-010	FB121	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1750140)									
EM1809975-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit

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 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 1750140) - continued									
EM1809816-010	FB121	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1755061)									
EM1809816-010	FB121	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809872-008	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1753884)									
EM1809991-002	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1809943-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1750067)									
EM1809016-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1 ppm	<0.1	0.00	No Limit
EM1809940-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.5	0.5	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1747120)									
EM1809816-010	FB121	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1747120)									
EM1809816-010	FB121	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1747120)									
EM1809816-010	FB121	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1747120)									
EM1809816-010	FB121	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1747119)									
EM1809816-010	FB121	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1747119)									
EM1809816-010	FB121	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit

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Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1747119)									
EM1809816-010	FB121	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1750546)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	100	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.8	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.6	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	91.9	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	90.0	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	98.6	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	101	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	80.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	100	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	95.4	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1750545)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	98.7	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1751059)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	99.6	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1754796)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	92.0	80	110
EK040T: Fluoride Total (QCLot: 1750429)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	95.2	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1750331)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	104	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1747822)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	84.1	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	83.4	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	85.4	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	86.4	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	90.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	85.8	74	114
EP074H: Naphthalene (QCLot: 1747822)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	94.8	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1747822)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	68.2	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	78.7	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1747822) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	82.0	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	76.0	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	83.3	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	75.7	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	77.1	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	73.6	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	79.9	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	79.7	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	94.5	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	79.2	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	82.4	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	86.8	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	74.6	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	85.9	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.8	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	86.6	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	81.8	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1750329)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	94.5	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	109	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	99.2	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	112	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	99.3	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	110	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	103	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	99.2	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	112	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1750329)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	110	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	94.3	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	107	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	107	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	109	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	122	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	104	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	101	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	112	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	109	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1750329)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	102	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	104	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	102	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	101	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	105	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	123	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	109	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	106	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	112	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	109	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	110	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	108	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	107	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	108	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	106	55	137
EP075I: Organochlorine Pesticides (QCLot: 1750329)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	105	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	104	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	108	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	105	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	110	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	105	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	106	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	110	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	110	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	109	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	111	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	110	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	104	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	119	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	107	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	111	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	110	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	112	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	110	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	107	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1747822)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	83.2	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1750139)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	103	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1750141)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.7	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.3	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.2	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.1	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	93.9	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.6	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.5	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	97.3	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.6	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1750140)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	88.2	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1755061)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1753884)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	93.0	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1750067)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	103	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1747426)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	83.5	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1747120)								



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1747120) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	97.9	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1747120)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	112	64	139
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	108	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	107	81	144
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	112	73	121
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	115	78	120
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	111	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	112	66	119
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	110	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	106	70	120
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	102	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	101	75	119
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	98.1	75	112
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	99.3	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	109	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1747120)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	99.0	82	114
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	102	76	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	101	82	112
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	103	62	119
EP074G: Trihalomethanes (QCLot: 1747120)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	114	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1747427)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	89.8	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	95.8	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	98.8	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	103	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	94.9	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	106	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	102	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	100	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	104	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	100	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	107	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	106	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	108	56	126

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
Method: Compound		CAS Number	LOR		Unit	Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1747427) - continued									
EP075(SIM): Indeno(1.2.3.cd)pyrene		193-39-5	1	µg/L	<1.0	5 µg/L	104	53	123
EP075(SIM): Dibenz(a,h)anthracene		53-70-3	1	µg/L	<1.0	5 µg/L	103	53	125
EP075(SIM): Benzo(g,h,i)perylene		191-24-2	1	µg/L	<1.0	5 µg/L	106	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1747423)									
EP075-EM: 2-Chlorophenol		95-57-8	2	µg/L	<2	10 µg/L	85.6	44	114
EP075-EM: 2.4-Dichlorophenol		120-83-2	2	µg/L	<2	10 µg/L	78.0	53	121
EP075-EM: 2.6-Dichlorophenol		87-65-0	2	µg/L	<2	10 µg/L	97.4	55	119
EP075-EM: 4-Chloro-3-methylphenol		59-50-7	4	µg/L	<4	10 µg/L	80.4	57	116
EP075-EM: 2.4.5-Trichlorophenol		95-95-4	2	µg/L	<2	10 µg/L	94.4	51	121
EP075-EM: 2.4.6-Trichlorophenol		88-06-2	2	µg/L	<2	10 µg/L	83.5	56	120
EP075-EM: 2.3.5.6-Tetrachlorophenol		935-95-5	2	µg/L	<2	10 µg/L	101	41	125
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol		4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	99.3	47	125
EP075-EM: Pentachlorophenol		87-86-5	2	µg/L	<2	20 µg/L	92.6	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1747423)									
EP075-EM: Phenol		108-95-2	4	µg/L	<4	10 µg/L	28.7	20	57
EP075-EM: 2-Methylphenol		95-48-7	4	µg/L	<4	10 µg/L	77.5	49	107
EP075-EM: 3- & 4-Methylphenol		1319-77-3	4	µg/L	<4	20 µg/L	61.7	48	101
EP075-EM: 2-Nitrophenol		88-75-5	4	µg/L	<4	10 µg/L	80.6	53	123
EP075-EM: 2.4-Dimethylphenol		105-67-9	4	µg/L	<4	10 µg/L	90.6	52	128
EP075-EM: 2.4-Dinitrophenol		51-28-5	100	µg/L	<100	60 µg/L	71.0	21	130
EP075-EM: 4-Nitrophenol		100-02-7	50	µg/L	<50	60 µg/L	31.7	13	60
EP075-EM: 2-Methyl-4.6-dinitrophenol		8071-51-0	50	µg/L	<50	60 µg/L	109	56	126
EP075-EM: Dinoseb		88-85-7	50	µg/L	<50	60 µg/L	118	55	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol		131-89-5	50	µg/L	<50	50 µg/L	97.8	32	135
EP075I: Organochlorine Pesticides (QCLot: 1747423)									
EP075-EM: alpha-BHC		319-84-6	0.5	µg/L	<0.5	10 µg/L	97.5	59	126
EP075-EM: Heptachlor		76-44-8	0.5	µg/L	<0.5	10 µg/L	101	59	131
EP075-EM: Aldrin		309-00-2	0.5	µg/L	<0.5	10 µg/L	95.2	59	133
EP075-EM: cis-Chlordane		5103-71-9	0.5	µg/L	<0.5	10 µg/L	98.5	61	133
EP075-EM: trans-Chlordane		5103-74-2	0.5	µg/L	<0.5	10 µg/L	99.1	60	132
EP075-EM: 4.4`-DDE		72-55-9	0.5	µg/L	<0.5	10 µg/L	102	56	130
EP075-EM: Dieldrin		60-57-1	0.5	µg/L	<0.5	10 µg/L	97.8	59	130
EP075-EM: 4.4`-DDD		72-54-8	0.5	µg/L	<0.5	10 µg/L	95.7	62	136
EP075-EM: 4.4`-DDT		50-29-3	0.5	µg/L	<0.5	10 µg/L	97.5	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1747119)									
EP080: C6 - C9 Fraction		----	20	µg/L	<20	360 µg/L	104	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1747428)									



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit						
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1747428) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	108	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	108	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	106	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1747119)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	104	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1747428)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	108	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	107	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	107	58	137
EP080: BTEXN (QCLot: 1747119)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	107	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	104	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	98.3	73	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	97.0	72	131
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	97.2	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	92.8	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1750546)							
EM1809816-004	NEL-BH203_1.5m	EG005T: Arsenic	7440-38-2	50 mg/kg	115	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	114	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	111	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	97.5	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	114	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	107	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	101	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1750545)							
EM1809816-004	NEL-BH203_1.5m	EG035T: Mercury	7439-97-6	5 mg/kg	114	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1751059)							
EM1809816-004	NEL-BH203_1.5m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	79.3	58	114



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1754796)							
EM1809816-004	NEL-BH203_1.5m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	94.2	77	113
EK040T: Fluoride Total (QCLot: 1750429)							
EM1809816-004	NEL-BH203_1.5m	EK040T: Fluoride	16984-48-8	400 mg/kg	102	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1750331)							
EM1809816-008	NEL-BH204_1.5m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	103	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1747822)							
EM1809816-004	NEL-BH203_1.5m	EP074-UT: Benzene	71-43-2	2 mg/kg	59.4	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	59.9	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1747822)							
EM1809816-004	NEL-BH203_1.5m	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	53.2	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	53.0	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	63.6	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1750329)							
EM1809816-004	NEL-BH203_1.5m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	83.9	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	78.3	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	42.8	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1750329)							
EM1809816-004	NEL-BH203_1.5m	EP075-EM: Phenol	108-95-2	1 mg/kg	82.7	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	67.8	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1750329)							
EM1809816-004	NEL-BH203_1.5m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	96.0	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	98.6	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1747822)							
EM1809816-004	NEL-BH203_1.5m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	52.0	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1750330)							
EM1809816-006	NEL-BH204_0.5m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	90.2	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	106	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	95.9	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1747822)							
EM1809816-004	NEL-BH203_1.5m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	50.5	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1750330)							
EM1809816-006	NEL-BH204_0.5m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	94.7	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	102	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	88.1	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1750141)							
EM1809816-010	FB121	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	92.7	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	89.5	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	91.7	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.3	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	92.6	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	92.2	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1750140)							
EM1809816-011	RB121	EG035F: Mercury	7439-97-6	0.01 mg/L	82.3	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1755061)							
EM1809816-011	RB121	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	99.6	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1753884)							
EM1809816-011	RB121	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	95.6	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1750067)							
EM1809016-003	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	102	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1747120)							
EM1809816-011	RB121	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	115	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	103	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1747120)							
EM1809816-011	RB121	EP074: Chlorobenzene	108-90-7	20 µg/L	100	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1747119)							
EM1809816-011	RB121	EP080: C6 - C9 Fraction	----	280 µg/L	88.6	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1747119)							
EM1809816-011	RB121	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	88.8	44	122
EP080: BTEXN (QCLot: 1747119)							
EM1809816-011	RB121	EP080: Benzene	71-43-2	20 µg/L	112	68	130
		EP080: Toluene	108-88-3	20 µg/L	102	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1809816	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 19-Jun-2018
Site	: ----	Issue Date	: 28-Jun-2018
Sampler	: GHD	No. of samples received	: 11
Order number	:	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
FB121, RB121	----	----	----	25-Jun-2018	18-Jun-2018	7

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)		18-Jun-2018	25-Jun-2018	25-Jun-2018	✔	25-Jun-2018	25-Jun-2018	✔
NEL-BH203_0.5m,	NEL-BH203_1.5m,							
NEL-BH204_0.5m,	NEL-BH204_1.5m							
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		18-Jun-2018	----	----	----	22-Jun-2018	02-Jul-2018	✔
NEL-BH203_0.5m,	NEL-BH203_1.5m,							
NEL-BH204_0.5m,	NEL-BH204_1.5m							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	26-Jun-2018	15-Dec-2018	✔	26-Jun-2018	15-Dec-2018	✔
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	26-Jun-2018	16-Jul-2018	✔	27-Jun-2018	16-Jul-2018	✔
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	26-Jun-2018	16-Jul-2018	✔	26-Jun-2018	03-Jul-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	26-Jun-2018	02-Jul-2018	✔	27-Jun-2018	10-Jul-2018	✔
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	25-Jun-2018	16-Jul-2018	✔	26-Jun-2018	16-Jul-2018	✔
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	25-Jun-2018	02-Jul-2018	✔	25-Jun-2018	04-Aug-2018	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	22-Jun-2018	25-Jun-2018	✔	22-Jun-2018	25-Jun-2018	✔
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	22-Jun-2018	25-Jun-2018	✔	22-Jun-2018	25-Jun-2018	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	22-Jun-2018	25-Jun-2018	✔	22-Jun-2018	25-Jun-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	25-Jun-2018	02-Jul-2018	✔	25-Jun-2018	04-Aug-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	25-Jun-2018	02-Jul-2018	✔	25-Jun-2018	04-Aug-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	25-Jun-2018	02-Jul-2018	✔	25-Jun-2018	04-Aug-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	25-Jun-2018	02-Jul-2018	✔	25-Jun-2018	04-Aug-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	22-Jun-2018	25-Jun-2018	✔	22-Jun-2018	25-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	25-Jun-2018	02-Jul-2018	✔	25-Jun-2018	04-Aug-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	22-Jun-2018	25-Jun-2018	✔	22-Jun-2018	25-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH203_0.5m, NEL-BH204_0.5m,	NEL-BH203_1.5m, NEL-BH204_1.5m	18-Jun-2018	25-Jun-2018	02-Jul-2018	✔	25-Jun-2018	04-Aug-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) FB121, RB121	18-Jun-2018	----	----	----	25-Jun-2018	18-Jun-2018	✘	
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) FB121, RB121	18-Jun-2018	----	----	----	25-Jun-2018	15-Dec-2018	✔	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) FB121, RB121	18-Jun-2018	----	----	----	27-Jun-2018	02-Jul-2018	✔	
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) FB121, RB121	18-Jun-2018	----	----	----	26-Jun-2018	16-Jul-2018	✔	



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) FB121,	RB121	18-Jun-2018	----	----	----	26-Jun-2018	02-Jul-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) FB121,	RB121	18-Jun-2018	----	----	----	25-Jun-2018	16-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) FB121,	RB121	18-Jun-2018	22-Jun-2018	25-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) FB121,	RB121	18-Jun-2018	22-Jun-2018	02-Jul-2018	✓	22-Jun-2018	02-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB121,	RB121	18-Jun-2018	22-Jun-2018	02-Jul-2018	✓	22-Jun-2018	02-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB121,	RB121	18-Jun-2018	22-Jun-2018	02-Jul-2018	✓	22-Jun-2018	02-Jul-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) FB121,	RB121	18-Jun-2018	22-Jun-2018	02-Jul-2018	✓	22-Jun-2018	02-Jul-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB121,	RB121	18-Jun-2018	22-Jun-2018	25-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB121,	RB121	18-Jun-2018	22-Jun-2018	25-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB121,	RB121	18-Jun-2018	22-Jun-2018	25-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) FB121,	RB121	18-Jun-2018	22-Jun-2018	25-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) FB121,	RB121	18-Jun-2018	22-Jun-2018	25-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB121, RB121	FB121,	18-Jun-2018	22-Jun-2018	02-Jul-2018	✓	22-Jun-2018	02-Jul-2018	✓

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 Work Order : EM1809816
 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
FB121,	RB121	18-Jun-2018	22-Jun-2018	25-Jun-2018	✔	25-Jun-2018	01-Aug-2018	✔
Amber VOC Vial - Sulfuric Acid (EP080)								
TB121,	FB121,	18-Jun-2018	22-Jun-2018	02-Jul-2018	✔	22-Jun-2018	02-Jul-2018	✔
RB121								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
TB121,	FB121,	18-Jun-2018	22-Jun-2018	02-Jul-2018	✔	22-Jun-2018	02-Jul-2018	✔
RB121								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.

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Work Order : EM1809816
Client : GHD PTY LTD
Project : 31350060910



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1809854**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **2**
No. of samples analysed : **2**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 07-Jun-2018 15:45
Date Analysis Commenced : 21-Jun-2018
Issue Date : 22-Jun-2018 16:10



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1809233



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				NEL-ENV-BH022_0.2m	NEL-ENV-BH022_0.5m	----	----	----
Client sampling date / time				06-Jun-2018 00:00	06-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1809854-003	EM1809854-004	-----	-----	-----
				Result	Result	----	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	----	----	----



Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Client sample ID

				NEL-ENV-BH022_0.2m	NEL-ENV-BH022_0.5m	----	----	----
Client sampling date / time				06-Jun-2018 00:00	06-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1809854-003	EM1809854-004	-----	-----	-----
Result				Result	Result	----	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	6.4	5.8	----	----	----
After HCl pH	----	0.1	pH Unit	1.3	1.3	----	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	----	----	----
Final pH	----	0.1	pH Unit	4.9	4.9	----	----	----

Rebatch

Client / Client code: GHD

Project: 31350060910

Project Manger: KORY AUCH

Date /time sample rec: 7/6 @ 3:45pm

Date/time Instructions rec: 19/6 @ 4:52pm

Due date: std

Due date surcharge:

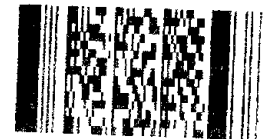
CS Contact: Shirley

Additional Information:

MS: 2450

[illegible]

Environmental Division
Melbourne
Work Order Reference
EM1809854



Telephone : - 81-3-8549 9800

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Tuesday, 19 June 2018 4:52 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1809233 | Overall Description: North East Link - Contamination: Additionally-EM1809234

Hi Shirley,

Could we please have IWRG621 leachate testing for lead conducted for the following?

EM1809233:

NEL-ENV-BH022_0.2m = Lead leachate test
NEL-ENV-BH022_0.5m = Lead leachate test

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

From: David Quinn

Sent: Tuesday, 19 June 2018 3:48 PM

To: Kory Auch <Kory.Auch@ghd.com>

Cc: Mark Clough <Mark.Clough@ghd.com>

Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1809233 | Overall Description: North East Link - Contamination

Hi Kory

Can you please check the results to see if we need to request any leachability tests? Jon/Adam should be inputting the results.

Thanks

David Quinn

Senior Environmental Engineer

Waste Management & Environmental Compliance

GHD

Proudly employee owned

T: +61 3 8687 8627 | M: +61 437 227 626 | V: 318 627 | E: david.quinn@ghd.com
Level 18, 180 Lonsdale Street Melbourne VIC 3000 | www.ghd.com

Connect



**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1809854**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 2
Order number	: ----	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 07-Jun-2018 15:45	Issue Date	: 20-Jun-2018
Client Requested Due Date	: 27-Jun-2018	Scheduled Reporting Date	: 27-Jun-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1809233

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- ### Summary of Sample(s) and Requested Analysis

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - E Leachate	SOIL - E ASPL L
EM1809854-003	06-Jun-2018 00:00	NEL-ENV-BH022_0.2m	✓	✓
EM1809854-004	06-Jun-2018 00:00	NEL-ENV-BH022_0.5m	✓	✓

Sample(s) have been received within the recommended holding times for the requested analysis.

Email kory.auch@ghd.com

QUALITY CONTROL REPORT

Work Order	: EM1809854	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 07-Jun-2018
Order number	: ----	Date Analysis Commenced	: 21-Jun-2018
C-O-C number	: ----	Issue Date	: 22-Jun-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 2		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1746926)									
EM1809745-002	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1746926)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	103	88	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1746926)							
EM1809749-012	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	90.0	86	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1809854**

Page : 1 of 4

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **KORY AUCH**

Telephone : +61-3-8549 9630

Project : 31350060910

Date Samples Received : 07-Jun-2018

Site : ----

Issue Date : 22-Jun-2018

Sampler : ----

No. of samples received : 2

Order number : ----

No. of samples analysed : 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-ENV-BH022_0.2m, NEL-ENV-BH022_0.5m	06-Jun-2018	21-Jun-2018	03-Dec-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-ENV-BH022_0.2m, NEL-ENV-BH022_0.5m	21-Jun-2018	22-Jun-2018	18-Dec-2018	✔	22-Jun-2018	18-Dec-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1809877**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 31-May-2018 17:10
Date Analysis Commenced : 25-Jun-2018
Issue Date : 26-Jun-2018 17:00



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1808885



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				NEL-BH155_1.0m	----	----	----	----
				Client sampling date / time	31-May-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1809877-003	-----	-----	-----	-----
				Result	----	----	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	----	----	----	----
Nickel	7440-02-0	0.1	mg/L	<0.1	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-BH155_1.0m	----	----	----	----
			Client sampling date / time	31-May-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1809877-003	-----	-----	-----	-----
Result				----	----	----	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	7.2	----	----	----	----
After HCl pH	----	0.1	pH Unit	1.3	----	----	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	----	----	----	----
Final pH	----	0.1	pH Unit	4.9	----	----	----	----

Shirley

Additional Information:

Date /time sample rec: 31/5 @ 5:10pm

Date/time Instructions rec: 20/6 @ 3:23pm

Due date: std

Due date surcharge:

MS: 2454

Environmental Division
Melbourne
Work Order Reference
EM1809877



Telephone : + 61-3-9549 9601

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Wednesday, 20 June 2018 3:23 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1808885 | Overall Description: North East Link - Contamination

Hi Shirley,

Could we please have IWRG621 leachate testing conducted for the following?

EM1808885:

NEL-BH155_1.0m = lead and nickel leachate tests

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | **V:** 318948 | **M:** 0478 797 000 | **E:** kory.auch@ghd.com

From: David Quinn
Sent: Wednesday, 20 June 2018 2:30 PM
To: Kory Auch <Kory.Auch@ghd.com>
Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1808885 | Overall Description: North East Link - Contamination

Hi Kory

Can you please request leachate tests for these results.

Thanks
David

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Wednesday, 20 June 2018 2:26 PM
To: David Quinn <David.Quinn@ghd.com>
Subject: RESULTS & EDD & INVOICE for ALS Workorder : EM1808885 | Overall Description: North East Link - Contamination



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1809877

<p>Client : GHD PTY LTD</p> <p>Contact : KORY AUCH</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : kory.auch@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : ----</p> <p>Sampler : ----</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 2</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Dates

<p>Date Samples Received : 31-May-2018 17:10</p> <p>Client Requested Due Date : 27-Jun-2018</p>	<p>Issue Date : 20-Jun-2018</p> <p>Scheduled Reporting Date : 27-Jun-2018</p>
---------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------

Delivery Details

<p>Mode of Delivery : Samples On Hand</p> <p>No. of coolers/boxes : ----</p> <p>Receipt Detail : ----</p>	<p>Security Seal : Not Available</p> <p>Temperature : ----</p> <p>No. of samples received / analysed : 1 / 1</p>
--------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1808885

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- ### Summary of Sample(s) and Requested Analysis

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - E Leachate	SOIL - E ASPLU
EM1809877-003	31-May-2018 00:00	NEL-BH155_1.0m	✓	✓

Sample(s) have been received within the recommended holding times for the requested analysis.

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1809877	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 31-May-2018
Order number	: ----	Date Analysis Commenced	: 25-Jun-2018
C-O-C number	: ----	Issue Date	: 26-Jun-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1754069)									
EM1809877-003	NEL-BH155_1.0m	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1809911-006	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	0.5	0.5	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1754069)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	94.7	88	113
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	94.7	86	111

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1754069)							
EM1809881-009	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	88.3	86	118
		EG005C: Nickel	7440-02-0	1 mg/L	90.8	88	116

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1809877**

Page : 1 of 4

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **KORY AUCH**

Telephone : +61-3-8549 9630

Project : 31350060910

Date Samples Received : 31-May-2018

Site : ----

Issue Date : 26-Jun-2018

Sampler : ----

No. of samples received : 1

Order number : ----

No. of samples analysed : 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH155 1.0m	31-May-2018	25-Jun-2018	27-Nov-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH155 1.0m	25-Jun-2018	26-Jun-2018	22-Dec-2018	✔	26-Jun-2018	22-Dec-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1809881**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **3**
No. of samples analysed : **3**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 07-Jun-2018 15:45
Date Analysis Commenced : 25-Jun-2018
Issue Date : 26-Jun-2018 17:00



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

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- Analytical Results

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<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



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Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
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ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1809234

Page : 3 of 4
 Work Order : EM1809881
 Client : GHD PTY LTD
 Project : 31350060910



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-EF-BH017_0.5m	NEL-EF-BH017_1.0m	NEL-EF-BH017_1.5m	----	----
Client sampling date / time				05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1809881-009	EM1809881-010	EM1809881-011	-----	-----
				Result	Result	Result	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.1	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH017_0.5m	NEL-EF-BH017_1.0m	NEL-EF-BH017_1.5m	----	----
Client sampling date / time					05-Jun-2018 00:00	05-Jun-2018 00:00	05-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809881-009	EM1809881-010	EM1809881-011	-----	-----
					Result	Result	Result	----	----
EN60: ASLP Leaching Procedure									
Initial pH	----	0.1	pH Unit		8.8	8.6	8.3	----	----
After HCl pH	----	0.1	pH Unit		1.2	1.2	1.3	----	----
Extraction Fluid pH	----	0.1	pH Unit		5.0	5.0	5.0	----	----
Final pH	----	0.1	pH Unit		5.0	5.0	4.9	----	----

Rebatch

Client / Client code: GHD

Project: 31350060910

Project Manger: KORY AUCH

Date /time sample rec: 7/6 @ 3:45pm

Date/time Instructions rec: 19/6 @ 4:52pm

Due date: std

Due date surcharge:

CS Contact:

Shirley

Additional Information:

MS: ~~2345~~ 2454

[illegible]

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Tuesday, 19 June 2018 4:52 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1809234 | Overall Description: Nort East Link - Contamination

Hi Shirley,

Could we please have IWRG621 leachability tests for lead conducted for the following?

EM1809234:

NEL-ENV-BH017_0.5m = Lead leachate test
NEL-ENV-BH017_1.0m = Lead leachate test
NEL-ENV-BH017_1.5m = Lead leachate test

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | **V:** 318948 | **M:** 0478 797 000 | **E:** kory.auch@ghd.com

From: David Quinn
Sent: Tuesday, 19 June 2018 3:53 PM
To: Kory Auch <Kory.Auch@ghd.com>
Cc: Mark Clough <Mark.Clough@ghd.com>
Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1809234 | Overall Description: Nort East Link - Contamination

FYI

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Monday, 18 June 2018 4:24 PM
To: David Quinn <David.Quinn@ghd.com>
Subject: RESULTS & EDD & INVOICE for ALS Workorder : EM1809234 | Overall Description: Nort East Link - Contamination



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1809881

<p>Client : GHD PTY LTD</p> <p>Contact : KORY AUCH</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : kory.auch@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : ----</p> <p>Sampler :</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 2</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Dates

Date Samples Received : 07-Jun-2018 15:45	Issue Date : 20-Jun-2018
Client Requested Due Date : 27-Jun-2018	Scheduled Reporting Date : 27-Jun-2018

Delivery Details

Mode of Delivery : Samples On Hand	Security Seal : Not Available
No. of coolers/boxes : ----	Temperature : ----
Receipt Detail :	No. of samples received / analysed : 3 / 3

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1809234

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- ### Summary of Sample(s) and Requested Analysis

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - E Leachate	SOIL - E ASPL
EM1809881-009	05-Jun-2018 00:00	NEL-EF-BH017_0.5m	✓	✓
EM1809881-010	05-Jun-2018 00:00	NEL-EF-BH017_1.0m	✓	✓
EM1809881-011	05-Jun-2018 00:00	NEL-EF-BH017_1.5m	✓	✓

Sample(s) have been received within the recommended holding times for the requested analysis.

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1809881	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 07-Jun-2018
Order number	: ----	Date Analysis Commenced	: 25-Jun-2018
C-O-C number	: ----	Issue Date	: 26-Jun-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1754069)									
EM1809877-003	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1809911-006	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	0.5	0.5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit		Result	Concentration	LCS	Low
EG005C: Leachable Metals by ICPAES (QCLot: 1754069)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	94.7	88	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1754069)							
EM1809881-009	NEL-EF-BH017_0.5m	EG005C: Lead	7439-92-1	1 mg/L	88.3	86	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1809881**

Page : 1 of 4

Client : **GHD PTY LTD**
 Contact : **KORY AUCH**
 Project : **31350060910**
 Site : ----
 Sampler : ----
 Order number : ----

Laboratory : Environmental Division Melbourne
 Telephone : +61-3-8549 9630
 Date Samples Received : 07-Jun-2018
 Issue Date : 26-Jun-2018
 No. of samples received : 3
 No. of samples analysed : 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a)	05-Jun-2018	25-Jun-2018	02-Dec-2018	✔	----	----	----
NEL-EF-BH017_0.5m, NEL-EF-BH017_1.0m,							
NEL-EF-BH017_1.5m							

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG005C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)								
NEL-EF-BH017_0.5m, NEL-EF-BH017 1.5m	NEL-EF-BH017_1.0m,	25-Jun-2018	26-Jun-2018	22-Dec-2018	✔	26-Jun-2018	22-Dec-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1809961**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **AS, SH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **6**
No. of samples analysed : **5**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 21-Jun-2018 13:10
Date Analysis Commenced : 22-Jun-2018
Issue Date : 29-Jun-2018 17:20



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH200_0.5m	NEL-BH200_1.0m	----	----	----
Client sampling date / time					20-Jun-2018 00:00	20-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809961-002	EM1809961-003	-----	-----	-----
				Result	Result		----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.7	7.1	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		18.7	13.8	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	6	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		10	7	----	----	----
Lead	7439-92-1	5	mg/kg		22	27	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		19	8	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		41	13	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		200	180	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH200_0.5m	NEL-BH200_1.0m	----	----	----
Client sampling date / time					20-Jun-2018 00:00	20-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809961-002	EM1809961-003	-----	-----	-----
				Result	Result		----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH200_0.5m	NEL-BH200_1.0m	----	----	----
Client sampling date / time				20-Jun-2018 00:00	20-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1809961-002	EM1809961-003	-----	-----	-----
				Result	Result	----	----	----

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH200_0.5m	NEL-BH200_1.0m	----	----	----
Client sampling date / time				20-Jun-2018 00:00	20-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1809961-002	EM1809961-003	-----	-----	-----
				Result	Result	----	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH200_0.5m	NEL-BH200_1.0m	----	----	----
Client sampling date / time					20-Jun-2018 00:00	20-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1809961-002	EM1809961-003	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		101	98.1	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		79.0	78.8	----	----	----
Toluene-D8	2037-26-5	0.1	%		74.5	73.2	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		83.5	91.5	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		105	102	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		85.5	84.0	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		97.3	100	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		104	98.8	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		97.9	94.4	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		115	112	----	----	----
Anthracene-d10	1719-06-8	0.025	%		107	104	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		122	119	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB122	RB122	TB122	----	----
Client sampling date / time					20-Jun-2018 00:00	20-Jun-2018 00:00	20-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809961-004	EM1809961-005	EM1809961-006	-----	-----
				Result	Result	Result		----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		9.08	8.19	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
^ Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L		<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB122	RB122	TB122	----	----
Client sampling date / time					20-Jun-2018 00:00	20-Jun-2018 00:00	20-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809961-004	EM1809961-005	EM1809961-006	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB122	RB122	TB122	----	----
Client sampling date / time					20-Jun-2018 00:00	20-Jun-2018 00:00	20-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809961-004	EM1809961-005	EM1809961-006	-----	-----
					Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,6-Dichlorophenol	87-65-0	2	µg/L		<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L		<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L		<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L		<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L		<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L		<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L		<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	4	µg/L		<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L		<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L		<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L		<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L		<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L		<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L		<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L		<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L		<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L		<50	<50	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L		<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB122	RB122	TB122	----	----
Client sampling date / time					20-Jun-2018 00:00	20-Jun-2018 00:00	20-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809961-004	EM1809961-005	EM1809961-006	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		71.8	74.7	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		75.8	88.7	----	----	----
Toluene-D8	2037-26-5	5	%		88.8	120	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		103	123	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		24.3	26.0	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		65.4	69.5	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		60.8	66.3	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		71.5	78.0	----	----	----
Anthracene-d10	1719-06-8	1.0	%		79.4	87.0	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		84.7	96.3	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB122	RB122	TB122	----	----
Client sampling date / time					20-Jun-2018 00:00	20-Jun-2018 00:00	20-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1809961-004	EM1809961-005	EM1809961-006	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		25.9	26.1	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		81.2	69.8	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		74.0	67.5	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		81.1	71.8	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		87.1	76.1	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		91.6	81.3	----	----	----
Anthracene-d10	1719-06-8	0.25	%		96.0	86.5	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		107	96.4	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		84.3	98.7	----	----	----
Toluene-D8	2037-26-5	2	%		94.5	120	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		95.5	123	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Friday, 22 June 2018 9:39 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: EM1809961 - GHD - 31350060910
Attachments: 22062018091726-0001.pdf

Hi Shirley,

Please analyse the following at standard TAT:

EM1809961:

NEL-BH200_0.5m = IWRG621
NEL-BH200_1.0m = IWRG621

FB122 = IWRG621 water equivalent
RB122 = IWRG621 water equivalent
TB122 = Volatile TPH/BTEX

Regards,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Friday, 22 June 2018 9:29 AM
To: David Quinn <David.Quinn@ghd.com>; Kory Auch <Kory.Auch@ghd.com>
Subject: FW: EM1809961 - GHD - 31350060910

Hi David & Kory

Attached is yesterday COC, please email analysis when you get a chance.

Thanks

Shirley

Shirley LeCornu

Client Services Officer – Springvale
Environmental

QUALITY CONTROL REPORT

Work Order	: EM1809961	Page	: 1 of 18
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 21-Jun-2018
Order number	:	Date Analysis Commenced	: 22-Jun-2018
C-O-C number	: ----	Issue Date	: 29-Jun-2018
Sampler	: AS, SH		
Site	:		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 6		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1752213)									
EM1809900-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.9	7.8	1.27	0% - 20%
EM1810018-005	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	5.5	5.5	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1747892)									
EM1809816-002	Anonymous	EA055: Moisture Content	----	0.1	%	8.8	8.6	2.77	No Limit
EM1809977-001	Anonymous	EA055: Moisture Content	----	0.1	%	24.0	24.7	3.07	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1754777)									
EM1809961-002	NEL-BH200_0.5m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	19	13	36.6	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	9	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	22	29	28.8	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	41	41	0.00	No Limit
EM1810095-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	18	20	7.33	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	7	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1754777) - continued									
EM1810095-003	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	6	6	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1754778)									
EM1809961-002	NEL-BH200_0.5m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810095-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1754903)									
EM1809961-002	NEL-BH200_0.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809971-041	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1758560)									
EM1809961-002	NEL-BH200_0.5m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1809971-091	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1750429)									
EM1809816-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	230	210	7.27	No Limit
EM1809952-049	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	220	250	13.6	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1753721)									
EM1809961-002	NEL-BH200_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1747822)									
EM1809816-002	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1809961-003	NEL-BH200_1.0m	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1747822)									
EM1809816-002	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1809961-003	NEL-BH200_1.0m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1747822)									
EM1809816-002	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1747822) - continued									
EM1809816-002	Anonymous	EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1809961-003	NEL-BH200_1.0m	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1753720)							
EM1809961-002	NEL-BH200_0.5m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1753720) - continued									
EM1809961-002	NEL-BH200_0.5m	EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1753720)									
EM1809961-002	NEL-BH200_0.5m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1753720)									
EM1809961-002	NEL-BH200_0.5m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1753720)									
EM1809961-002	NEL-BH200_0.5m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1753720) - continued									
EM1809961-002	NEL-BH200_0.5m	EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1747822)									
EM1809816-002	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1809961-003	NEL-BH200_1.0m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1753719)									
EM1810166-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	140	220	44.5	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809961-002	NEL-BH200_0.5m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1747822)									
EM1809816-002	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1809961-003	NEL-BH200_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1753719)									
EM1810166-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	130	220	49.5	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	140	250	58.4	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1809961-002	NEL-BH200_0.5m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1750069)									



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1750069) - continued									
EM1809771-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.32	6.30	0.380	0% - 20%
EM1809940-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.68	7.65	0.391	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1754320)									
EM1809016-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1809961-004	FB122	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.002	78.3	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1754321)									
EM1809961-004	FB122	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1754322)									
EM1809971-130	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1809961-004	FB122	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1765460)									
EM1809961-004	FB122	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1753884)									
EM1809991-002	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1809943-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1750067)									
EM1809016-002	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1 ppm	<0.1	0.00	No Limit
EM1809940-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.5	0.5	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1749923)									
EM1809961-004	FB122	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1749923)									
EM1809961-004	FB122	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1749923) - continued									
EM1809961-004	FB122	EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
	EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit	
EP074F: Halogenated Aromatic Compounds (QC Lot: 1749923)									
EM1809961-004	FB122	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1749923)									
EM1809961-004	FB122	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1749924)									
EM1809998-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	260	260	0.00	0% - 50%
EM1809961-004	FB122	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1749924)									
EM1809998-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	260	260	0.00	0% - 50%
EM1809961-004	FB122	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1749924)									
EM1809998-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	191	199	3.68	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	10	10	0.00	No Limit
EM1809961-004	FB122	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit	



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1749924) - continued									
EM1809961-004	FB122	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1754777)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	92.8	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	101	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	88.2	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	87.8	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	93.5	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	99.9	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.2	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	93.2	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	94.0	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1754778)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	87.8	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1754903)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	85.6	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1758560)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	90.1	80	110
EK040T: Fluoride Total (QCLot: 1750429)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	95.2	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1753721)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	110	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1747822)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	84.1	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	83.4	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	85.4	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	86.4	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	90.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	85.8	74	114
EP074H: Naphthalene (QCLot: 1747822)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	94.8	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1747822)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	68.2	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	78.7	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1747822) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	82.0	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	76.0	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	83.3	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	75.7	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	77.1	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	73.6	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	79.9	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	79.7	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	94.5	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	79.2	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	82.4	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	86.8	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	74.6	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	85.9	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.8	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	86.6	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	81.8	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1753720)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	98.8	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	117	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	101	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	113	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	100	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	113	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	103	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	102	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	116	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1753720)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	110	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	103	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	110	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	121	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	# 122	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	117	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	85.0	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	82.8	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	91.0	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	102	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1753720)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	105	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	101	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	109	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	106	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	105	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	# 132	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	105	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	104	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	111	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	108	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	107	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	108	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	103	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	103	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	103	55	137
EP075I: Organochlorine Pesticides (QCLot: 1753720)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	101	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	109	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	99.1	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	101	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	104	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	104	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	103	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	112	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	109	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	110	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	101	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	106	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	97.0	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	102	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	97.0	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	99.7	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	106	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	104	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	105	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	104	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1747822)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	83.2	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1754320)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.1	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.5	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	99.4	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	92.7	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	93.8	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.3	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.9	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	98.4	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.0	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1754321)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	102	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1754322)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	87.8	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1765460)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	106	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1753884)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	93.0	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1750067)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	103	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1747426)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	83.5	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1749923)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1749923) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	96.0	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1749923)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	70.6	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	74.4	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	86.9	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	89.2	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	89.5	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	79.4	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	76.2	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	91.2	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	78.1	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	104	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	85.8	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	90.8	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	108	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	83.2	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1749923)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	89.7	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	92.1	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	89.3	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	85.2	62	119
EP074G: Trihalomethanes (QCLot: 1749923)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	89.1	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1747427)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	89.8	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	95.8	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	98.8	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	103	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	94.9	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	106	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	102	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	100	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	104	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	100	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	107	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	106	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	108	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1747427) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	104	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	103	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	106	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1747423)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	85.6	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	78.0	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	97.4	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	80.4	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	94.4	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	83.5	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	101	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5	2	µg/L	<2	20 µg/L	99.3	47	125
EP075-EM: Pentachlorophenol	8-90-2							
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	92.6	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1747423)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	28.7	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	77.5	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	61.7	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	80.6	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	90.6	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	71.0	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	31.7	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	109	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	118	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	97.8	32	135
EP075I: Organochlorine Pesticides (QCLot: 1747423)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	97.5	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	101	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	95.2	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	98.5	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	99.1	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	102	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	97.8	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	95.7	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	97.5	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1747428)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	108	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	108	60	133

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report

				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1754777)							
EM1809961-003	NEL-BH200_1.0m	EG005T: Arsenic	7440-38-2	50 mg/kg	93.2	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.9	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	100	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	99.4	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	88.8	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	99.2	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	89.7	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	105	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1754778)							
EM1809961-003	NEL-BH200_1.0m	EG035T: Mercury	7439-97-6	5 mg/kg	96.7	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1754903)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1754903) - continued							
EM1809961-003	NEL-BH200_1.0m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	62.8	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1758560)							
EM1809961-003	NEL-BH200_1.0m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	94.6	77	113
EK040T: Fluoride Total (QCLot: 1750429)							
EM1809816-004	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	102	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1753721)							
EM1810086-004	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	116	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1747822)							
EM1809816-004	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	59.4	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	59.9	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1747822)							
EM1809816-004	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	53.2	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	53.0	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	63.6	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1753720)							
EM1809961-003	NEL-BH200_1.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	96.9	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	92.2	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	69.0	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1753720)							
EM1809961-003	NEL-BH200_1.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	86.4	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	94.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1753720)							
EM1809961-003	NEL-BH200_1.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	79.3	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	105	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1747822)							
EM1809816-004	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	52.0	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1753719)							
EM1809931-003	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	118	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	124	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	112	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1747822)							
EM1809816-004	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	50.5	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1753719)							
EM1809931-003	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	118	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	118	67	121

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 Work Order : EM1809961
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1753719) - continued							
EM1809931-003	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	112	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1754320)							
EM1809016-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	94.4	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	88.9	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.9	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.1	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	91.5	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	91.9	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1754322)							
EM1809961-005	RB122	EG035F: Mercury	7439-97-6	0.01 mg/L	82.8	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1765460)							
EM1809961-005	RB122	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	105	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1753884)							
EM1809816-011	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	95.6	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1750067)							
EM1809016-003	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	102	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1749923)							
EM1809961-005	RB122	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	61.9	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	69.2	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1749923)							
EM1809961-005	RB122	EP074: Chlorobenzene	108-90-7	20 µg/L	93.8	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1749924)							
EM1809961-005	RB122	EP080: C6 - C9 Fraction	----	280 µg/L	84.2	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1749924)							
EM1809961-005	RB122	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	82.5	44	122
EP080: BTEXN (QCLot: 1749924)							
EM1809961-005	RB122	EP080: Benzene	71-43-2	20 µg/L	115	68	130
		EP080: Toluene	108-88-3	20 µg/L	98.8	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1809961	Page	: 1 of 12
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 21-Jun-2018
Site	:	Issue Date	: 29-Jun-2018
Sampler	: AS, SH	No. of samples received	: 6
Order number	:	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Matrix Spike outliers occur.
- Laboratory Control outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075A: Phenolic Compounds (Non-halogenated)	QC-1753720-001	----	2,4-Dimethylphenol	105-67-9	122 %	43-120%	Recovery greater than upper control limit
EP075B: Polynuclear Aromatic Hydrocarbons	QC-1753720-001	----	Anthracene	120-12-7	132 %	55-127%	Recovery greater than upper control limit

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural FB122,	RB122	----	----	----	25-Jun-2018	20-Jun-2018	5

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	26-Jun-2018	27-Jun-2018	✓	26-Jun-2018	26-Jun-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	----	----	----	22-Jun-2018	04-Jul-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	27-Jun-2018	17-Dec-2018	✓	27-Jun-2018	17-Dec-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	27-Jun-2018	18-Jul-2018	✓	27-Jun-2018	18-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	27-Jun-2018	18-Jul-2018	✓	27-Jun-2018	04-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	27-Jun-2018	04-Jul-2018	✓	28-Jun-2018	11-Jul-2018	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	25-Jun-2018	18-Jul-2018	✓	26-Jun-2018	18-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	26-Jun-2018	04-Jul-2018	✓	26-Jun-2018	05-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	22-Jun-2018	27-Jun-2018	✓	22-Jun-2018	27-Jun-2018	✓
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	22-Jun-2018	27-Jun-2018	✓	22-Jun-2018	27-Jun-2018	✓
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	22-Jun-2018	27-Jun-2018	✓	22-Jun-2018	27-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	26-Jun-2018	04-Jul-2018	✓	26-Jun-2018	05-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	26-Jun-2018	04-Jul-2018	✓	26-Jun-2018	05-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	26-Jun-2018	04-Jul-2018	✔	26-Jun-2018	05-Aug-2018	✔
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	26-Jun-2018	04-Jul-2018	✔	26-Jun-2018	05-Aug-2018	✔
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	22-Jun-2018	27-Jun-2018	✔	22-Jun-2018	27-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	26-Jun-2018	04-Jul-2018	✔	26-Jun-2018	05-Aug-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	22-Jun-2018	27-Jun-2018	✔	22-Jun-2018	27-Jun-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH200_0.5m, NEL-BH200_1.0m	20-Jun-2018	26-Jun-2018	04-Jul-2018	✔	26-Jun-2018	05-Aug-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) FB122, RB122	20-Jun-2018	----	----	----	25-Jun-2018	20-Jun-2018	✗	
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) FB122, RB122	20-Jun-2018	----	----	----	26-Jun-2018	17-Dec-2018	✓	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) FB122, RB122	20-Jun-2018	----	----	----	27-Jun-2018	04-Jul-2018	✓	
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) FB122, RB122	20-Jun-2018	----	----	----	29-Jun-2018	18-Jul-2018	✓	
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) FB122, RB122	20-Jun-2018	----	----	----	26-Jun-2018	04-Jul-2018	✓	
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) FB122, RB122	20-Jun-2018	----	----	----	25-Jun-2018	18-Jul-2018	✓	
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) FB122, RB122	20-Jun-2018	22-Jun-2018	27-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓	



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) FB122,	RB122	20-Jun-2018	25-Jun-2018	04-Jul-2018	✓	25-Jun-2018	04-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB122,	RB122	20-Jun-2018	25-Jun-2018	04-Jul-2018	✓	25-Jun-2018	04-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB122,	RB122	20-Jun-2018	25-Jun-2018	04-Jul-2018	✓	25-Jun-2018	04-Jul-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) FB122,	RB122	20-Jun-2018	25-Jun-2018	04-Jul-2018	✓	25-Jun-2018	04-Jul-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB122,	RB122	20-Jun-2018	22-Jun-2018	27-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB122,	RB122	20-Jun-2018	22-Jun-2018	27-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB122,	RB122	20-Jun-2018	22-Jun-2018	27-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) FB122,	RB122	20-Jun-2018	22-Jun-2018	27-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) FB122,	RB122	20-Jun-2018	22-Jun-2018	27-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB122, TB122	RB122,	20-Jun-2018	25-Jun-2018	04-Jul-2018	✓	25-Jun-2018	04-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) FB122,	RB122	20-Jun-2018	22-Jun-2018	27-Jun-2018	✓	25-Jun-2018	01-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB122, TB122	RB122,	20-Jun-2018	25-Jun-2018	04-Jul-2018	✓	25-Jun-2018	04-Jul-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) FB122, TB122	RB122,	20-Jun-2018	25-Jun-2018	04-Jul-2018	✓	25-Jun-2018	04-Jul-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.

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Work Order : EM1809961
Client : GHD PTY LTD
Project : 31350060910



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1810010**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **2**
No. of samples analysed : **2**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 07-Jun-2018 15:45
Date Analysis Commenced : 26-Jun-2018
Issue Date : 27-Jun-2018 15:32



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1809234

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 Work Order : EM1810010
 Client : GHD PTY LTD
 Project : 31350060910



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				NEL-BH138_0.35m	NEL-BH138_1.0m	----	----	----
Client sampling date / time				22-Jun-2018 00:00	22-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1810010-001	EM1810010-003	-----	-----	-----
				Result	Result	----	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	----	----	----



Analytical Results

Sub-Matrix: **SOIL**
 (Matrix: **SOIL**)

Client sample ID

				NEL-BH138_0.35m	NEL-BH138_1.0m	----	----	----
Client sampling date / time				22-Jun-2018 00:00	22-Jun-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1810010-001	EM1810010-003	-----	-----	-----
Result				Result	Result	----	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	7.6	7.6	----	----	----
After HCl pH	----	0.1	pH Unit	1.3	1.3	----	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	----	----	----
Final pH	----	0.1	pH Unit	4.9	4.9	----	----	----

Rebatch

Client / Client code: GHD

Project: 31350060910

Project Manger: KORY AUCH

Date /time sample rec: 7/6 @ 3:45pm

Date/time Instructions rec: 19/6 @ 4:52pm

Due date: std

Due date surcharge:

CS Contact: Shirley

Additional Information:

MS: 2492

[illegible]

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Tuesday, 19 June 2018 4:59 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1809231 | Overall Description: North East Link - Contamination

Hi Shirley,

Could we please have IWRG621 leachate testing for lead conducted for the following?

EM1809231:

NEL-EF-BH019_0.2m = Lead leachate test
NEL-EF-BH019_1.0m = Lead leachate test

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | **V:** 318948 | **M:** 0478 797 000 | **E:** kory.auch@ghd.com

From: David Quinn
Sent: Tuesday, 19 June 2018 4:40 PM
To: Kory Auch <Kory.Auch@ghd.com>
Cc: Mark Clough <Mark.Clough@ghd.com>
Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1809231 | Overall Description: North East Link - Contamination

FYI

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Tuesday, 19 June 2018 4:38 PM
To: David Quinn <David.Quinn@ghd.com>
Subject: RESULTS & EDD & INVOICE for ALS Workorder : EM1809231 | Overall Description: North East Link - Contamination



**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1810010**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 2
Order number	: ----	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 07-Jun-2018 15:45	Issue Date	: 22-Jun-2018
Client Requested Due Date	: 29-Jun-2018	Scheduled Reporting Date	: 29-Jun-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1809234

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- ### Summary of Sample(s) and Requested Analysis

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - E Leachate	SOIL - E ASPL Leachate
EM1810010-001	22-Jun-2018 00:00	NEL-BH138_0.35m	✓	✓
EM1810010-003	22-Jun-2018 00:00	NEL-BH138_1.0m	✓	✓

Sample(s) have been received within the recommended holding times for the requested analysis.

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1810010	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 07-Jun-2018
Order number	: ----	Date Analysis Commenced	: 26-Jun-2018
C-O-C number	: ----	Issue Date	: 27-Jun-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 2		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1757690)									
EM1809979-004	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1810122-004	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit			Result	LCS	Low
EG005C: Leachable Metals by ICPAES (QCLot: 1757690)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	89.8	88	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1757690)							
EM1810010-001	NEL-BH138_0.35m	EG005C: Lead	7439-92-1	1 mg/L	91.0	86	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1810010**

Page : 1 of 4

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **KORY AUCH**

Telephone : +61-3-8549 9630

Project : 31350060910

Date Samples Received : 07-Jun-2018

Site : ----

Issue Date : 27-Jun-2018

Sampler : ----

No. of samples received : 2

Order number : ----

No. of samples analysed : 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH138_0.35m, NEL-BH138_1.0m	22-Jun-2018	26-Jun-2018	19-Dec-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH138_0.35m, NEL-BH138_1.0m	26-Jun-2018	27-Jun-2018	23-Dec-2018	✔	27-Jun-2018	23-Dec-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1810219**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **MM, SH**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **11**
No. of samples analysed : **8**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 26-Jun-2018 10:40
Date Analysis Commenced : 27-Jun-2018
Issue Date : 03-Jul-2018 16:29



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075-EM/EP066-EM: Particular samples (EM-1810219-004,008) required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.
- pH analysis is done under non-stirring condition.
- EP074/EP080: Particular samples EM1810219_11 has LOR raised for Methylene Chloride due to potential laboratory background level. Confirmed by re-analysis.
- EP075-EM: Sample EM1810253_1 shows poor precision due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH135_0.2m	NEL-BH135_1.0m	NEL-BH202_0.2m	NEL-BH202_1.0m	QC1006
Client sampling date / time					25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1810219-001	EM1810219-003	EM1810219-004	EM1810219-006	EM1810219-008
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		4.9	6.8	7.0	7.4	7.2
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		23.6	24.4	13.7	21.2	13.2
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		7	12	11	6	9
Lead	7439-92-1	5	mg/kg		23	10	16	10	14
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		6	28	26	9	22
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		33	25	33	11	30
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		150	370	120	140	120
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.2	<0.1	<0.2
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH135_0.2m	NEL-BH135_1.0m	NEL-BH202_0.2m	NEL-BH202_1.0m	QC1006
Client sampling date / time					25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1810219-001	EM1810219-003	EM1810219-004	EM1810219-006	EM1810219-008
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.07	<0.03	<0.07
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.07	<0.03	<0.07
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.07	<0.03	<0.07
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.07	<0.03	<0.07
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.07	<0.05	<0.07
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.07	<0.05	<0.07
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.07	<0.03	<0.07
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.14	<0.05	<0.14
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.07	<0.03	<0.07

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH135_0.2m	NEL-BH135_1.0m	NEL-BH202_0.2m	NEL-BH202_1.0m	QC1006
Client sampling date / time				25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	
Compound	CAS Number	LOR	Unit	EM1810219-001	EM1810219-003	EM1810219-004	EM1810219-006	EM1810219-008	
				Result	Result	Result	Result	Result	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<6	<5	<6	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.6	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.6	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	2.2	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.6	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.5	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	1.0	<0.5	4.7	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.7	<0.5	3.0	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.6	<0.5	1.9	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.6	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	1.0	<0.5	2.6	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	3.3	<0.5	20.8	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<1.4	<0.5	4.5	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	<1.4	0.6	4.5	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.4	1.2	4.5	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH135_0.2m	NEL-BH135_1.0m	NEL-BH202_0.2m	NEL-BH202_1.0m	QC1006
Client sampling date / time				25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00
Compound	CAS Number	LOR	Unit	EM1810219-001	EM1810219-003	EM1810219-004	EM1810219-006	EM1810219-008
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.07	<0.05	<0.07
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.07	<0.05	<0.07
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.07	<0.05	<0.07
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.07	<0.05	<0.07
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.07	<0.03	<0.07
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	150
C29 - C36 Fraction	----	100	mg/kg	<100	<100	240	<100	150
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	240	<50	300
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH135_0.2m	NEL-BH135_1.0m	NEL-BH202_0.2m	NEL-BH202_1.0m	QC1006
Client sampling date / time					25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00
Compound	CAS Number	LOR	Unit		EM1810219-001	EM1810219-003	EM1810219-004	EM1810219-006	EM1810219-008
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	240	<100	250
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	180	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	420	<50	250
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		92.0	99.5	104	89.8	99.6
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		73.2	74.8	67.8	80.0	71.7
Toluene-D8	2037-26-5	0.1	%		66.0	62.2	56.2	69.9	59.4
4-Bromofluorobenzene	460-00-4	0.1	%		73.4	68.9	59.8	74.2	64.9
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		86.7	104	72.8	80.2	64.7
2-Chlorophenol-D4	93951-73-6	0.025	%		68.6	83.5	60.2	58.5	52.4
2,4,6-Tribromophenol	118-79-6	0.025	%		86.7	84.0	84.9	71.1	79.1
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		77.9	94.6	64.4	61.0	56.2
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		67.6	82.8	59.5	49.3	52.0
2-Fluorobiphenyl	321-60-8	0.025	%		87.7	103	83.8	69.1	74.7
Anthracene-d10	1719-06-8	0.025	%		92.8	102	104	88.7	97.3
4-Terphenyl-d14	1718-51-0	0.025	%		112	119	117	105	110



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB124	RB124	FB124	----	----
Client sampling date / time				25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810219-009	EM1810219-010	EM1810219-011	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	----	5.81	5.69	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	----	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L	----	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	----	<0.01	<0.01	----	----
Tin	7440-31-5	0.001	mg/L	----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	----	<0.005	<0.005	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	----	<0.01	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	----	<0.004	<0.004	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	----	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	----	<1	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	----	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	----	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	----	<5	<5	----	----
Methylene chloride	75-09-2	5	µg/L	----	<5	<7	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	----	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	----	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	----	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	----	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	----	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L	----	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB124	RB124	FB124	----	----
Client sampling date / time					25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810219-009	EM1810219-010	EM1810219-011	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		----	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L		----	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		----	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		----	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		----	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		----	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		----	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		----	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		----	<5	<5	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		----	<5	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		----	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L		----	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L		----	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L		----	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L		----	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L		----	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L		----	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		----	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		----	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		----	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		----	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		----	<2	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		----	<2	<2	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				TB124	RB124	FB124	----	----
Client sampling date / time				25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810219-009	EM1810219-010	EM1810219-011	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	----	<2	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	----	<4	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	----	<2	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	----	<2	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	----	<2	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	----	<2	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	----	<2	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	----	<4	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	----	<4	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	----	<4	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	----	<4	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	----	<4	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	----	<100	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	----	<50	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	----	<50	<50	----	----
Dinoseb	88-85-7	50	µg/L	----	<50	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	----	<50	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	----	<0.5	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	----	<0.5	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	----	<0.5	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	<0.5	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	----	<0.5	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB124	RB124	FB124	----	----
Client sampling date / time					25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810219-009	EM1810219-010	EM1810219-011	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		----	104	112	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		----	112	104	----	----
Toluene-D8	2037-26-5	5	%		----	114	105	----	----
4-Bromofluorobenzene	460-00-4	5	%		----	118	111	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	28.1	33.6	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	70.3	82.8	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	74.7	84.3	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	83.3	92.5	----	----
Anthracene-d10	1719-06-8	1.0	%		----	87.0	97.2	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	96.7	104	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB124	RB124	FB124	----	----
Client sampling date / time					25-Jun-2018 00:00	25-Jun-2018 00:00	25-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810219-009	EM1810219-010	EM1810219-011	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		----	41.6	41.8	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		----	97.0	90.0	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		----	86.9	79.1	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		----	109	94.2	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		----	106	94.9	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		----	119	105	----	----
Anthracene-d10	1719-06-8	0.25	%		----	117	104	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		----	130	117	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		75.8	95.7	105	----	----
Toluene-D8	2037-26-5	2	%		78.5	103	103	----	----
4-Bromofluorobenzene	460-00-4	2	%		93.9	117	117	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Tuesday, 26 June 2018 10:55 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: EM1810219, EM1810220 - GHD - 31350060910

Hi Shirley,

Please analyse the following at standard TAT:

EM1810219:

- 1 NEL-BH135_0.2m = IWRG621
- 3 NEL-BH135_1.0m = IWRG621
- 4 NEL-BH202_0.2m = IWRG621
- 6 NEL-BH202_1.0m = IWRG621
- 8 QC1006 = IWRG621
- 9 TB124 = Volatile TPH/BTEX
- 10 RB124 = IWRG621 water equivalent
- 11 FB124 = IWRG621 water equivalent

EM1810220:

NEL-BH201_0.5m = IWRG621
NEL-BH201_1.0m = IWRG621
NEL-BH232_0.5m = IWRG621
NEL-BH232_1.5m = IWRG621

TB123 = Volatile TPH/BTEX
FB123 = IWRG621 water equivalent
RB123 = IWRG621 water equivalent

Regards,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Friday, 22 June 2018 9:29 AM
To: David Quinn <David.Quinn@ghd.com>; Kory Auch <Kory.Auch@ghd.com>
Subject: FW: EM1809961 - GHD - 31350060910

Hi David & Kory

Attached is yesterday COC, please email analysis when you get a chance.

QUALITY CONTROL REPORT

Work Order	: EM1810219	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 26-Jun-2018
Order number	:	Date Analysis Commenced	: 27-Jun-2018
C-O-C number	: ----	Issue Date	: 03-Jul-2018
Sampler	: MM, SH		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 11		
No. of samples analysed	: 8		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1762873)									
EM1810159-012	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	5.8	5.8	0.00	0% - 20%
EM1810222-011	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.5	7.5	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1758017)									
EM1810204-001	Anonymous	EA055: Moisture Content	----	0.1	%	2.0	2.2	8.34	No Limit
EM1810216-002	Anonymous	EA055: Moisture Content	----	0.1	%	10.2	10.4	1.20	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1760985)									
EM1810204-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	9	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	6	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	15	14	8.20	No Limit
EM1810219-008	QC1006	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	22	22	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	9	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	14	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1760985) - continued									
EM1810219-008	QC1006	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	30	30	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1760986)									
EM1810204-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810219-008	QC1006	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1762890)									
EM1810088-015	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810219-001	NEL-BH135_0.2m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1765233)									
EM1810159-012	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	1	0.00	No Limit
EM1810220-008	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1762865)									
EM1810159-012	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	240	220	11.8	No Limit
EM1810220-008	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	260	280	7.73	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1760915)									
EM1810219-001	NEL-BH135_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810253-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1758067)									
EM1810219-001	NEL-BH135_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810253-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1758067)									
EM1810219-001	NEL-BH135_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1810253-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1758067)									
EM1810219-001	NEL-BH135_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1758067) - continued									
EM1810219-001	NEL-BH135_0.2m	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1810253-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1760901)							
EM1810253-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1760901) - continued									
EM1810253-001	Anonymous	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.14	<0.14	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1810219-001	NEL-BH135_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1760901)									
EM1810253-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<6	<6	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1810219-001	NEL-BH135_0.2m	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1760901)									
EM1810253-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1760901) - continued									
EM1810253-001	Anonymous	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	5.0	3.8	28.9	0% - 50%
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	1.5	1.0	34.6	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	38.0	# 29.3	25.8	0% - 20%
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	11.0	# 8.8	22.5	0% - 20%
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	44.0	41.8	5.32	0% - 20%
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	40.9	38.5	5.97	0% - 20%
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	21.5	19.5	9.52	0% - 20%
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	19.3	17.5	9.69	0% - 20%
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	32.1	29.8	7.32	0% - 20%
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	20.1	18.6	7.83	0% - 20%
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	8.7	7.9	9.53	0% - 50%
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	2.9	2.6	10.0	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	9.3	8.4	9.82	0% - 50%
EM1810219-001	NEL-BH135_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1760901)									
EM1810253-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1760901) - continued									
EM1810253-001	Anonymous	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
EM1810219-001	NEL-BH135_0.2m	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1758067)									
EM1810219-001	NEL-BH135_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1810253-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1760914)									
EM1810253-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	860	730	16.6	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	400	340	15.9	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1810219-001	NEL-BH135_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

EG035F: Dissolved Mercury by FIMS (QC Lot: 1764264)



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 1764264) - continued									
EM1810219-010	RB124	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1765460)									
EM1809961-004	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1761456)									
EM1810055-003	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1810288-003	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.054	0.058	7.30	0% - 50%
EK040P: Fluoride by PC Titrator (QC Lot: 1757551)									
EM1810219-011	FB124	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1760365)									
EM1810219-010	RB124	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1760365)									
EM1810219-010	RB124	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1760365)									
EM1810219-010	RB124	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1760365)									
EM1810219-010	RB124	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1760364)									
EM1810313-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	370	340	7.30	0% - 50%
EM1810219-010	RB124	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1760364)									
EM1810313-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	840	780	7.12	0% - 20%
EM1810219-010	RB124	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit

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 Work Order : EM1810219
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1760364)									
EM1810313-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	4	4	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	26	24	7.10	0% - 50%
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	20	19	6.26	0% - 50%
EM1810219-010	RB124	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1760985)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	94.4	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.5	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	91.6	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	90.7	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	87.0	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	95.3	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	96.9	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.6	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	90.0	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	94.3	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1760986)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	77.9	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1762890)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	78.5	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1765233)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	95.6	80	110
EK040T: Fluoride Total (QCLot: 1762865)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	100	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1760915)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	109	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1758067)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	83.6	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	79.7	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	78.4	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	78.3	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	83.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	82.2	74	114
EP074H: Naphthalene (QCLot: 1758067)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	91.9	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1758067)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	78.3	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	73.8	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1758067) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	85.2	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	79.8	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	86.2	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	90.7	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	80.6	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	78.8	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	98.0	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	81.3	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	97.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	75.5	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	92.1	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	96.4	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	69.1	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	83.4	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	83.1	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	87.6	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	73.3	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1760901)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	88.4	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	102	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	89.3	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	103	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	90.9	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	102	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	92.2	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	88.0	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	96.8	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1760901)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	97.2	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	106	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	97.0	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	101	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	101	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	98.4	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	96.4	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	81.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	89.9	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	85.0	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1760901)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	91.1	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	92.9	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	93.8	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	91.3	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	94.0	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	117	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	97.0	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	97.0	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	104	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	101	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	105	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	103	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	103	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	104	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	102	55	137
EP075I: Organochlorine Pesticides (QCLot: 1760901)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	92.5	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	91.6	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	95.2	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	92.8	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	90.5	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	92.7	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	94.8	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	97.9	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	98.4	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	96.6	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	98.2	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	98.1	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	92.1	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	117	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	94.7	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	99.4	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	102	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	98.6	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	100	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	99.2	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1758067)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	78.7	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1764263)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	97.7	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1764265)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.0	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.9	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.6	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	97.8	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.1	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	92.7	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	105	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1764264)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.5	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1765460)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	106	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1761456)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	90.7	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1757551)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	105	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1757446)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	84.8	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1760365)								



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1760365) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	106	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1760365)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	88.9	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	97.6	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	106	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	103	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	105	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	99.8	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	92.4	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	98.9	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	103	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	104	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	94.4	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	94.2	75	112
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	104	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	105	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1760365)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	105	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	108	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	106	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	107	62	119
EP074G: Trihalomethanes (QCLot: 1760365)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	107	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1757447)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	94.2	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	95.2	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	99.2	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	100.0	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	94.3	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	103	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	96.2	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	94.0	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	95.2	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	96.9	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	105	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	106	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	106	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1757447) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	101	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	102	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	102	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1757448)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	87.6	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	90.4	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	97.3	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	84.4	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	103	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	91.4	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	109	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	53.4	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	101	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1757448)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	36.4	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	81.2	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	70.2	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	97.4	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	101	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	121	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	34.7	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	93.2	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	107	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	126	32	135
EP075I: Organochlorine Pesticides (QCLot: 1757448)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	107	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	123	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	115	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	120	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	121	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	126	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	117	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	108	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	111	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1757445)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	80.0	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	86.3	60	133

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report

Spike

SpikeRecovery(%)

Recovery Limits (%)

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1760985)							
EM1810204-006	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	101	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.5	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	101	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	95.8	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	88.4	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	97.2	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	90.2	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	95.3	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1760986)							
EM1810204-006	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.0	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1762890)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1762890) - continued							
EM1810088-026	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	69.0	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1765233)							
EM1810219-001	NEL-BH135_0.2m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	101	77	113
EK040T: Fluoride Total (QCLot: 1762865)							
EM1810219-001	NEL-BH135_0.2m	EK040T: Fluoride	16984-48-8	400 mg/kg	99.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1760915)							
EM1810219-006	NEL-BH202_1.0m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	99.9	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1758067)							
EM1810219-003	NEL-BH135_1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	63.5	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	60.1	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1758067)							
EM1810219-003	NEL-BH135_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	52.2	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	57.8	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	67.8	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1760901)							
EM1810219-003	NEL-BH135_1.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	97.8	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	82.9	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	28.5	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1760901)							
EM1810219-003	NEL-BH135_1.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	88.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	74.7	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1760901)							
EM1810219-003	NEL-BH135_1.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	99.2	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	102	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1758067)							
EM1810219-003	NEL-BH135_1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	51.8	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1760914)							
EM1810219-004	NEL-BH202_0.2m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	100	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	102	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	82.7	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1758067)							
EM1810219-003	NEL-BH135_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	50.3	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1760914)							
EM1810219-004	NEL-BH202_0.2m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	99.7	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	94.5	67	121

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 Work Order : EM1810219
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1760914) - continued							
EM1810219-004	NEL-BH202_0.2m	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	60.2	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1764265)							
EM1810219-010	RB124	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	89.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	83.9	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	76.9	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	78.8	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	83.4	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	89.1	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1764264)							
EM1810219-011	FB124	EG035F: Mercury	7439-97-6	0.01 mg/L	97.9	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1765460)							
EM1809961-005	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	105	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1761456)							
EM1810055-005	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	90.4	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1757551)							
EM1810220-010	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	99.4	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1760365)							
EM1810219-011	FB124	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	94.1	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	86.6	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1760365)							
EM1810219-011	FB124	EP074: Chlorobenzene	108-90-7	20 µg/L	100	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1760364)							
EM1810219-011	FB124	EP080: C6 - C9 Fraction	----	280 µg/L	88.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1760364)							
EM1810219-011	FB124	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	87.2	44	122
EP080: BTEXN (QCLot: 1760364)							
EM1810219-011	FB124	EP080: Benzene	71-43-2	20 µg/L	100	68	130
		EP080: Toluene	108-88-3	20 µg/L	108	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1810219	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 26-Jun-2018
Site	: North East Link - Contamination	Issue Date	: 03-Jul-2018
Sampler	: MM, SH	No. of samples received	: 11
Order number	:	No. of samples analysed	: 8

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- Duplicate outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

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 Work Order : EM1810219
 Client : GHD PTY LTD
 Project : 31350060910



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP075B: Polynuclear Aromatic Hydrocarbons	EM1810253--001	Anonymous	Phenanthrene	85-01-8	25.8 %	0% - 20%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1810253--001	Anonymous	Anthracene	120-12-7	22.5 %	0% - 20%	RPD exceeds LOR based limits

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
RB124,	FB124	----	----	----	27-Jun-2018	25-Jun-2018	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Dissolved Mercury by FIMS	1	18	5.56	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	29-Jun-2018	02-Jul-2018	✓	29-Jun-2018	29-Jun-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	----	----	----	27-Jun-2018	09-Jul-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	29-Jun-2018	22-Dec-2018	✓	29-Jun-2018	22-Dec-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	29-Jun-2018	23-Jul-2018	✓	02-Jul-2018	23-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	29-Jun-2018	23-Jul-2018	✓	29-Jun-2018	06-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	29-Jun-2018	09-Jul-2018	✓	02-Jul-2018	13-Jul-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	29-Jun-2018	23-Jul-2018	✓	02-Jul-2018	23-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	27-Jun-2018	02-Jul-2018	✓	29-Jun-2018	02-Jul-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	27-Jun-2018	02-Jul-2018	✓	29-Jun-2018	02-Jul-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	27-Jun-2018	02-Jul-2018	✓	29-Jun-2018	02-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006	NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons									
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006		NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	27-Jun-2018	02-Jul-2018	✔	29-Jun-2018	02-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006		NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	28-Jun-2018	09-Jul-2018	✔	28-Jun-2018	07-Aug-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006		NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	27-Jun-2018	02-Jul-2018	✔	29-Jun-2018	02-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH135_0.2m, NEL-BH202_0.2m, QC1006		NEL-BH135_1.0m, NEL-BH202_1.0m,	25-Jun-2018	28-Jun-2018	09-Jul-2018	✔	28-Jun-2018	07-Aug-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) RB124,	FB124	25-Jun-2018	----	----	----	27-Jun-2018	25-Jun-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Natural (EG020B-F) RB124,	FB124	25-Jun-2018	----	----	----	29-Jun-2018	22-Dec-2018	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F) RB124,	FB124	25-Jun-2018	----	----	----	02-Jul-2018	23-Jul-2018	✔
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB124,	FB124	25-Jun-2018	----	----	----	29-Jun-2018	23-Jul-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF) RB124,	FB124	25-Jun-2018	----	----	----	28-Jun-2018	09-Jul-2018	✔
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB124,	FB124	25-Jun-2018	----	----	----	27-Jun-2018	23-Jul-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB124,	FB124	25-Jun-2018	27-Jun-2018	02-Jul-2018	✓	27-Jun-2018	06-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB124,	FB124	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	29-Jun-2018	09-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB124,	FB124	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	29-Jun-2018	09-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB124,	FB124	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	29-Jun-2018	09-Jul-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB124,	FB124	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	29-Jun-2018	09-Jul-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB124,	FB124	25-Jun-2018	27-Jun-2018	02-Jul-2018	✓	27-Jun-2018	06-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB124,	FB124	25-Jun-2018	27-Jun-2018	02-Jul-2018	✓	27-Jun-2018	06-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB124,	FB124	25-Jun-2018	27-Jun-2018	02-Jul-2018	✓	27-Jun-2018	06-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB124,	FB124	25-Jun-2018	27-Jun-2018	02-Jul-2018	✓	27-Jun-2018	06-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB124,	FB124	25-Jun-2018	27-Jun-2018	02-Jul-2018	✓	27-Jun-2018	06-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB124, FB124	RB124,	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	29-Jun-2018	09-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB124,	FB124	25-Jun-2018	27-Jun-2018	02-Jul-2018	✓	27-Jun-2018	06-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB124, FB124	RB124,	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	29-Jun-2018	09-Jul-2018	✓



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
TB124, RB124, FB124	25-Jun-2018	28-Jun-2018	09-Jul-2018	✓	29-Jun-2018	09-Jul-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **✖** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	18	5.56	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1810220**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **MM, SH**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **11**
No. of samples analysed : **7**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 26-Jun-2018 10:40
Date Analysis Commenced : 27-Jun-2018
Issue Date : 03-Jul-2018 15:56



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EP074: Particular samples EM1810220_[10, 11] has LOR raised for Methylene Chloride due to potential laboratory background level. Confirmed by re-analysis.
- EP075-EM: Sample EM1810253_1 shows poor precision due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH201_0.5m	NEL-BH201_1.0m	NEL-BH232_0.5m	NEL-BH232_1.5m	----
Client sampling date / time					22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810220-002	EM1810220-003	EM1810220-006	EM1810220-008	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.0	7.9	6.8	7.5	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		22.6	13.8	19.7	21.2	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	<5	<5	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		13	31	8	11	----
Lead	7439-92-1	5	mg/kg		14	24	12	14	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		20	24	12	15	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		24	45	20	22	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		360	230	250	260	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH201_0.5m	NEL-BH201_1.0m	NEL-BH232_0.5m	NEL-BH232_1.5m	----
Client sampling date / time					22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810220-002	EM1810220-003	EM1810220-006	EM1810220-008	-----
					Result	Result	Result	Result	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH201_0.5m	NEL-BH201_1.0m	NEL-BH232_0.5m	NEL-BH232_1.5m	----
Client sampling date / time				22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	----	
Compound	CAS Number	LOR	Unit	EM1810220-002	EM1810220-003	EM1810220-006	EM1810220-008	-----	
				Result	Result	Result	Result	----	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	----	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	----	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	----	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	----	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	----	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	----	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	----	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH201_0.5m	NEL-BH201_1.0m	NEL-BH232_0.5m	NEL-BH232_1.5m	----
Client sampling date / time					22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810220-002	EM1810220-003	EM1810220-006	EM1810220-008	-----
					Result	Result	Result	Result	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH201_0.5m	NEL-BH201_1.0m	NEL-BH232_0.5m	NEL-BH232_1.5m	----
Client sampling date / time					22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810220-002	EM1810220-003	EM1810220-006	EM1810220-008	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		91.7	92.5	94.2	96.5	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		83.5	74.6	79.4	76.4	----
Toluene-D8	2037-26-5	0.1	%		73.3	58.8	64.1	61.7	----
4-Bromofluorobenzene	460-00-4	0.1	%		76.7	72.0	70.6	67.7	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		89.8	60.7	81.2	94.6	----
2-Chlorophenol-D4	93951-73-6	0.025	%		63.2	45.3	51.5	66.3	----
2,4,6-Tribromophenol	118-79-6	0.025	%		76.4	64.8	69.3	71.9	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		67.2	49.4	52.4	73.6	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		46.0	42.8	32.3	50.2	----
2-Fluorobiphenyl	321-60-8	0.025	%		77.9	65.5	71.9	88.0	----
Anthracene-d10	1719-06-8	0.025	%		91.5	88.2	88.1	97.6	----
4-Terphenyl-d14	1718-51-0	0.025	%		108	107	106	117	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB123	FB123	RB123	----	----
Client sampling date / time					22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810220-009	EM1810220-010	EM1810220-011	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		----	5.70	5.86	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		----	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		----	<0.0001	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L		----	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L		----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L		----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L		----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L		----	<0.01	<0.01	----	----
Tin	7440-31-5	0.001	mg/L		----	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L		----	<0.005	<0.005	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	<0.0001	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		----	<0.01	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		----	<0.004	<0.004	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		----	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)									
^ Total Polychlorinated biphenyls	----	1	µg/L		----	<1	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		----	<5	<5	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		----	<50	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		----	<5	<5	----	----
Methylene chloride	75-09-2	5	µg/L		----	<8	<8	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		----	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		----	<5	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		----	<5	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		----	<5	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		----	<5	<5	----	----
Trichloroethene	79-01-6	5	µg/L		----	<5	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				TB123	FB123	RB123	----	----
Client sampling date / time				22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810220-009	EM1810220-010	EM1810220-011	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	----	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	----	<5	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	----	<5	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	----	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	----	<5	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	----	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	----	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	----	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	----	<5	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	----	<5	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	----	<1.0	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	----	<1.0	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	----	<1.0	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	----	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	----	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	----	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	----	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	----	<1.0	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	----	<1.0	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	----	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	----	<0.5	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	----	<2	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	----	<2	<2	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB123	FB123	RB123	----	----
Client sampling date / time				22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810220-009	EM1810220-010	EM1810220-011	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	----	<2	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	----	<4	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	----	<2	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	----	<2	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	----	<2	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	----	<2	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	----	<2	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	----	<4	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	----	<4	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	----	<4	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	----	<4	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	----	<4	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	----	<100	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	----	<50	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	----	<50	<50	----	----
Dinoseb	88-85-7	50	µg/L	----	<50	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	----	<50	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	----	<0.5	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	----	<0.5	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	----	<0.5	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	----	<0.5	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	----	<0.5	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	----	<0.5	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB123	FB123	RB123	----	----
Client sampling date / time					22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810220-009	EM1810220-010	EM1810220-011	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		----	80.5	91.9	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		----	91.2	87.8	----	----
Toluene-D8	2037-26-5	5	%		----	98.5	93.8	----	----
4-Bromofluorobenzene	460-00-4	5	%		----	105	101	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		----	28.0	28.4	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		----	65.5	68.6	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		----	65.0	66.3	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		----	75.5	82.6	----	----
Anthracene-d10	1719-06-8	1.0	%		----	77.2	84.3	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		----	86.3	94.5	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB123	FB123	RB123	----	----
Client sampling date / time					22-Jun-2018 00:00	22-Jun-2018 00:00	22-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810220-009	EM1810220-010	EM1810220-011	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		----	23.4	34.7	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		----	62.4	80.0	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		----	69.8	76.4	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		----	76.5	83.4	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		----	80.6	85.7	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		----	88.3	93.6	----	----
Anthracene-d10	1719-06-8	0.25	%		----	83.8	89.7	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		----	95.9	101	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		83.8	91.8	88.4	----	----
Toluene-D8	2037-26-5	2	%		83.2	99.7	95.1	----	----
4-Bromofluorobenzene	460-00-4	2	%		105	119	118	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		<i>Recovery Limits (%)</i>	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Environmental Division
Melbourne
Work Order Reference
EM1810220



Telephone : - 81-3-8549 9600

Sampled by:	GHD (M.Lo Madsen & S.HILLMAN)	Date/Time:	22/6/18	Pm	Relinquished by:	M.Lo Madsen	Date/Time:	22/6/18	Pm
Received by:	Core Shed Fridge	Date/Time:	22/6/18	Pm	Relinquished by:	Core Shed Fridge	Date/Time:	26/6/18	Am
Received by Courier:		Date/Time:			Relinquished by:		Date/Time:		
Received by Lab:	RPN	Date/Time:	26/6	10.40					
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)								

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Tuesday, 26 June 2018 10:55 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: EM1810219, EM1810220 - GHD - 31350060910

Hi Shirley,

Please analyse the following at standard TAT:

EM1810219:

NEL-BH135_0.2m = IWRG621
NEL-BH135_1.0m = IWRG621
NEL-BH202_0.2m = IWRG621
NEL-BH202_1.0m = IWRG621
QC1006 = IWRG621

TB124 = Volatile TPH/BTEX
RB124 = IWRG621 water equivalent
FB124 = IWRG621 water equivalent

EM1810220:

2 NEL-BH201_0.5m = IWRG621
3 NEL-BH201_1.0m = IWRG621
6 NEL-BH232_0.5m = IWRG621
8 NEL-BH232_1.5m = IWRG621

9 TB123 = Volatile TPH/BTEX
10 FB123 = IWRG621 water equivalent
11 RB123 = IWRG621 water equivalent

Regards,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Friday, 22 June 2018 9:29 AM
To: David Quinn <David.Quinn@ghd.com>; Kory Auch <Kory.Auch@ghd.com>
Subject: FW: EM1809961 - GHD - 31350060910

Hi David & Kory

Attached is yesterday COC, please email analysis when you get a chance.

QUALITY CONTROL REPORT

Work Order	: EM1810220	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 26-Jun-2018
Order number	: ----	Date Analysis Commenced	: 27-Jun-2018
C-O-C number	: ----	Issue Date	: 03-Jul-2018
Sampler	: MM, SH		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 11		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1758684)									
EM1810220-002	NEL-BH201_0.5m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.0	6.9	1.44	0% - 20%
EM1810253-003	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.1	7.1	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1758018)									
EM1810220-002	NEL-BH201_0.5m	EA055: Moisture Content	----	0.1	%	22.6	24.7	8.89	0% - 20%
EM1810222-011	Anonymous	EA055: Moisture Content	----	0.1	%	8.7	9.2	6.46	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1760985)									
EM1810204-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	9	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	6	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	15	14	8.20	No Limit
EM1810219-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	22	22	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	9	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	14	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1760985) - continued									
EM1810219-008	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	30	30	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1760986)									
EM1810204-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810219-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1762890)									
EM1810088-015	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810219-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1765233)									
EM1810159-012	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	1	0.00	No Limit
EM1810220-008	NEL-BH232_1.5m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1762865)									
EM1810159-012	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	240	220	11.8	No Limit
EM1810220-008	NEL-BH232_1.5m	EK040T: Fluoride	16984-48-8	40	mg/kg	260	280	7.73	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1760915)									
EM1810219-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810253-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1758067)									
EM1810219-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810253-001	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1758067)									
EM1810219-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1810253-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1758067)									
EM1810219-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1758067) - continued									
EM1810219-001	Anonymous	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1810253-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1760901)							
EM1810253-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1760901) - continued									
EM1810253-001	Anonymous	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.14	<0.14	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1810219-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1760901)									
EM1810253-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<6	<6	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1810219-001	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EM1810253-001	Anonymous	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1760901)							
		EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1760901) - continued									
EM1810253-001	Anonymous	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	5.0	3.8	28.9	0% - 50%
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	1.5	1.0	34.6	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	38.0	# 29.3	25.8	0% - 20%
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	11.0	# 8.8	22.5	0% - 20%
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	44.0	41.8	5.32	0% - 20%
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	40.9	38.5	5.97	0% - 20%
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	21.5	19.5	9.52	0% - 20%
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	19.3	17.5	9.69	0% - 20%
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	32.1	29.8	7.32	0% - 20%
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	20.1	18.6	7.83	0% - 20%
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	8.7	7.9	9.53	0% - 50%
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	2.9	2.6	10.0	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	9.3	8.4	9.82	0% - 50%
EM1810219-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1760901)									
EM1810253-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1760901) - continued									
EM1810253-001	Anonymous	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
EM1810219-001	Anonymous	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.07	<0.07	0.00	No Limit
		EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1758067)									
EM1810219-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1810253-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1760914)									
EM1810253-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	860	730	16.6	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	400	340	15.9	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1810219-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

EG035F: Dissolved Mercury by FIMS (QC Lot: 1764264)



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 1764264) - continued									
EM1810219-010	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1765460)									
EM1809961-004	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1761456)									
EM1810055-003	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1810288-003	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.054	0.058	7.30	0% - 50%
EK040P: Fluoride by PC Titrator (QC Lot: 1757551)									
EM1810219-011	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1760363)									
EM1810220-010	FB123	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1810248-010	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1760363)									
EM1810220-010	FB123	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<8	<8	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1810248-010	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit

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 Work Order : EM1810220
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1760363) - continued									
EM1810248-010	Anonymous	EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1760363)									
EM1810220-010	FB123	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1810248-010	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1760363)									
EM1810220-010	FB123	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1810248-010	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1760362)									
EM1810220-010	FB123	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1810248-010	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1760362)									
EM1810220-010	FB123	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1810248-010	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1760362)									
EM1810220-010	FB123	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1810248-010	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1760985)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	94.4	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.5	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	91.6	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	90.7	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	87.0	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	95.3	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	96.9	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.6	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	90.0	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	94.3	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1760986)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	77.9	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1762890)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	78.5	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1765233)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	95.6	80	110
EK040T: Fluoride Total (QCLot: 1762865)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	100	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1760915)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	109	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1758067)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	83.6	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	79.7	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	78.4	71	122
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	78.3	70	118
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	83.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	82.2	74	114
EP074H: Naphthalene (QCLot: 1758067)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	91.9	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1758067)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	78.3	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	73.8	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1758067) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	85.2	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	79.8	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	86.2	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	90.7	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	80.6	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	78.8	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	98.0	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	81.3	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	97.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	75.5	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	92.1	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	96.4	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	69.1	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	83.4	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	83.1	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	87.6	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	73.3	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1760901)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	88.4	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	102	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	89.3	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	103	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	90.9	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	102	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	92.2	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	88.0	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	96.8	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1760901)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	97.2	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	106	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	97.0	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	101	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	101	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	98.4	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	96.4	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	81.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	89.9	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	85.0	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1760901)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	91.1	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	92.9	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	93.8	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	91.3	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	94.0	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	117	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	97.0	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	97.0	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	104	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	101	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	105	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	103	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	103	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	104	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	102	55	137
EP075I: Organochlorine Pesticides (QCLot: 1760901)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	92.5	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	91.6	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	95.2	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	92.8	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	90.5	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	92.7	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	94.8	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	97.9	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	98.4	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	96.6	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	98.2	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	98.1	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	92.1	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	117	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	94.7	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	99.4	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	102	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	98.6	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	100	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	99.2	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1758067)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	78.7	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1764263)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	97.7	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1764265)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.0	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.9	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.6	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	97.8	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.1	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	92.7	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	105	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1764264)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.5	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1765460)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	106	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1761456)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	90.7	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1757551)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	105	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1757487)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	88.1	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1760363)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1760363) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	100	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1760363)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	85.2	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	89.6	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	98.4	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	91.4	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	96.9	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	87.6	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	85.9	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	102	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	95.6	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	104	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	88.2	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	93.0	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	109	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	97.6	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1760363)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	101	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	100	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	102	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	100	62	119
EP074G: Trihalomethanes (QCLot: 1760363)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	97.8	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1757488)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	76.0	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	73.0	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	77.2	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	76.8	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	77.5	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	89.0	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	77.4	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	74.8	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	74.0	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	79.7	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	77.0	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	81.0	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	77.7	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1757488) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	75.1	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	76.4	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	76.6	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1757486)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	92.7	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	89.8	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	100	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	88.8	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	103	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	92.3	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	112	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	106	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	101	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1757486)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	40.8	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	87.8	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	76.7	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	95.8	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	100.0	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	127	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	36.2	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	97.0	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	109	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	# 136	32	135
EP075I: Organochlorine Pesticides (QCLot: 1757486)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	110	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	121	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	115	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	117	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	118	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	125	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	116	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	107	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	110	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1757489)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	93.3	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	97.2	60	133

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report

Sub-Matrix: SOIL				Matrix: WATER			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1760985)							
EM1810204-006	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	101	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.5	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	101	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	95.8	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	88.4	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	97.2	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	90.2	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	95.3	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1760986)							
EM1810204-006	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.0	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1762890)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1762890) - continued							
EM1810088-026	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	69.0	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1765233)							
EM1810219-001	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	101	77	113
EK040T: Fluoride Total (QCLot: 1762865)							
EM1810219-001	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	99.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1760915)							
EM1810219-006	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	99.9	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1758067)							
EM1810219-003	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	63.5	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	60.1	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1758067)							
EM1810219-003	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	52.2	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	57.8	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	67.8	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1760901)							
EM1810219-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	97.8	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	82.9	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	28.5	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1760901)							
EM1810219-003	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	88.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	74.7	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1760901)							
EM1810219-003	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	99.2	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	102	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1758067)							
EM1810219-003	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	51.8	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1760914)							
EM1810219-004	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	100	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	102	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	82.7	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1758067)							
EM1810219-003	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	50.3	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1760914)							
EM1810219-004	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	99.7	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	94.5	67	121

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 Work Order : EM1810220
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1760914) - continued							
EM1810219-004	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	60.2	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1764265)							
EM1810219-010	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	89.6	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	83.9	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	76.9	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	78.8	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	83.4	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	89.1	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1764264)							
EM1810219-011	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	97.9	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1765460)							
EM1809961-005	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	105	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1761456)							
EM1810055-005	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	90.4	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1757551)							
EM1810220-010	FB123	EK040P: Fluoride	16984-48-8	5 mg/L	99.4	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1760363)							
EM1810220-011	RB123	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	102	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	81.7	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1760363)							
EM1810220-011	RB123	EP074: Chlorobenzene	108-90-7	20 µg/L	97.0	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1760362)							
EM1810220-011	RB123	EP080: C6 - C9 Fraction	----	280 µg/L	74.3	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1760362)							
EM1810220-011	RB123	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	72.7	44	122
EP080: BTEXN (QCLot: 1760362)							
EM1810220-011	RB123	EP080: Benzene	71-43-2	20 µg/L	80.7	68	130
		EP080: Toluene	108-88-3	20 µg/L	93.4	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1810220	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 26-Jun-2018
Site	: North East Link - Contamination	Issue Date	: 03-Jul-2018
Sampler	: MM, SH	No. of samples received	: 11
Order number	:	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank** value outliers occur.
- **NO Matrix Spike** outliers occur.
- Duplicate outliers exist - please see following pages for full details.
- Laboratory Control outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

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 Work Order : EM1810220
 Client : GHD PTY LTD
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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP075B: Polynuclear Aromatic Hydrocarbons	EM1810253--001	Anonymous	Phenanthrene	85-01-8	25.8 %	0% - 20%	RPD exceeds LOR based limits
EP075B: Polynuclear Aromatic Hydrocarbons	EM1810253--001	Anonymous	Anthracene	120-12-7	22.5 %	0% - 20%	RPD exceeds LOR based limits

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075A: Phenolic Compounds (Non-halogenated)	QC-1757486-001	----	2-Cyclohexyl-4.6-Dinitro phenol	131-89-5	136 %	32-135%	Recovery greater than upper control limit

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method			Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural								
FB123,	RB123		----	----	----	27-Jun-2018	22-Jun-2018	5

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Dissolved Mercury by FIMS	1	18	5.56	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	28-Jun-2018	29-Jun-2018	✓	28-Jun-2018	28-Jun-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	----	----	----	27-Jun-2018	06-Jul-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	29-Jun-2018	19-Dec-2018	✓	29-Jun-2018	19-Dec-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	29-Jun-2018	20-Jul-2018	✓	02-Jul-2018	20-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	29-Jun-2018	20-Jul-2018	✓	29-Jun-2018	06-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	29-Jun-2018	06-Jul-2018	✓	02-Jul-2018	13-Jul-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	29-Jun-2018	20-Jul-2018	✓	02-Jul-2018	20-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	29-Jun-2018	29-Jun-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	29-Jun-2018	29-Jun-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	29-Jun-2018	29-Jun-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	29-Jun-2018	29-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	29-Jun-2018	29-Jun-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH201_0.5m, NEL-BH232_0.5m,	NEL-BH201_1.0m, NEL-BH232_1.5m	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	28-Jun-2018	07-Aug-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) FB123,	RB123	22-Jun-2018	----	----	----	27-Jun-2018	22-Jun-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Natural (EG020B-F) FB123,	RB123	22-Jun-2018	----	----	----	29-Jun-2018	19-Dec-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F) FB123,	RB123	22-Jun-2018	----	----	----	02-Jul-2018	20-Jul-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) FB123,	RB123	22-Jun-2018	----	----	----	29-Jun-2018	20-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF) FB123,	RB123	22-Jun-2018	----	----	----	28-Jun-2018	06-Jul-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) FB123,	RB123	22-Jun-2018	----	----	----	27-Jun-2018	20-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) FB123,	RB123	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	27-Jun-2018	06-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) FB123,	RB123	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	29-Jun-2018	06-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB123,	RB123	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	29-Jun-2018	06-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB123,	RB123	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	29-Jun-2018	06-Jul-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) FB123,	RB123	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	29-Jun-2018	06-Jul-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB123,	RB123	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	27-Jun-2018	06-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB123,	RB123	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	28-Jun-2018	06-Aug-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB123,	RB123	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	28-Jun-2018	06-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) FB123,	RB123	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	28-Jun-2018	06-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) FB123,	RB123	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	27-Jun-2018	06-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB123, RB123	FB123,	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	29-Jun-2018	06-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) FB123,	RB123	22-Jun-2018	27-Jun-2018	29-Jun-2018	✓	27-Jun-2018	06-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB123, RB123	FB123,	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	29-Jun-2018	06-Jul-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) TB123, RB123	FB123,	22-Jun-2018	28-Jun-2018	06-Jul-2018	✓	29-Jun-2018	06-Jul-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **✖** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	18	5.56	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1810388**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **KORY AUCH / ?**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **4**
No. of samples analysed : **2**

Page : 1 of 8
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 28-Jun-2018 12:40
Date Analysis Commenced : 29-Jun-2018
Issue Date : 04-Jul-2018 12:32



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH011_0.5m	NEL-ENV-BH011_1.5m	----	----	----
Client sampling date / time					27-Jun-2018 08:40	27-Jun-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1810388-002	EM1810388-004	-----	-----	-----
					Result	Result	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.0	8.4	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		18.6	12.5	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		19	21	----	----	----
Lead	7439-92-1	5	mg/kg		14	14	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		34	36	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		56	57	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		360	360	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH011_0.5m	NEL-ENV-BH011_1.5m	----	----	----
Client sampling date / time					27-Jun-2018 08:40	27-Jun-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1810388-002	EM1810388-004	-----	-----	-----
				Result	Result		----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH011_0.5m	NEL-ENV-BH011_1.5m	----	----	----
Client sampling date / time				27-Jun-2018 08:40	27-Jun-2018 09:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1810388-002	EM1810388-004	-----	-----	-----	
				Result	Result	----	----	----	

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH011_0.5m	NEL-ENV-BH011_1.5m	----	----	----
Client sampling date / time				27-Jun-2018 08:40	27-Jun-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1810388-002	EM1810388-004	-----	-----	-----
				Result	Result	----	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH011_0.5m	NEL-ENV-BH011_1.5m	----	----	----
Client sampling date / time					27-Jun-2018 08:40	27-Jun-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1810388-002	EM1810388-004	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		109	105	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		80.1	79.5	----	----	----
Toluene-D8	2037-26-5	0.1	%		71.7	70.6	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		75.3	72.4	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		104	98.9	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		87.4	84.5	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		110	102	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		98.1	94.3	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		90.5	89.3	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		110	105	----	----	----
Anthracene-d10	1719-06-8	0.025	%		106	102	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		119	116	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

David Quinn (david.quinn@ghd.com) and GHD Lab Reports

Page 1 of 1

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1810388

<p>Client : GHD PTY LTD</p> <p>Contact : KORY AUCH</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : kory.auch@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : ----</p> <p>Sampler : KORY AUCH / ?</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 3</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

Date Samples Received : 28-Jun-2018 12:40	Issue Date : 28-Jun-2018
Client Requested Due : 05-Jul-2018	Scheduled Reporting Date : 04-Jul-2018
Date : ----	

Delivery Details

Mode of Delivery : Carrier	Security Seal : Intact.
No. of coolers/boxes : 1	Temperature : 5.6°C - Ice present
Receipt Detail : ----	No. of samples received / analysed : 4 / 2

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1810388-001	27-Jun-2018 08:30	NEL-ENV-BH011_0.1m	✓		
EM1810388-002	27-Jun-2018 08:40	NEL-ENV-BH011_0.5m		✓	✓
EM1810388-003	27-Jun-2018 08:50	NEL-ENV-BH011_1.0m	✓		
EM1810388-004	27-Jun-2018 09:00	NEL-ENV-BH011_1.5m		✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1810388	Page	: 1 of 11
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 28-Jun-2018
Order number	: ----	Date Analysis Commenced	: 29-Jun-2018
C-O-C number	: ----	Issue Date	: 04-Jul-2018
Sampler	: KORY AUCH / ?		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 4		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1765762)									
EM1810329-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.2	7.8	5.00	0% - 20%
EM1810399-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.5	7.5	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1764306)									
EM1810362-016	Anonymous	EA055: Moisture Content	----	0.1	%	12.0	11.9	0.00	0% - 50%
EM1810391-003	Anonymous	EA055: Moisture Content	----	0.1	%	23.2	22.7	2.19	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1765571)									
EM1810338-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	77	67	13.7	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	30	6.67	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	20	49.8	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	86	83	3.67	0% - 50%
EM1810361-013	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	17	16	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	7	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1765571) - continued									
EM1810361-013	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	27	26	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1765572)									
EM1810338-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810361-013	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1768174)									
EM1810329-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810399-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1769433)									
EM1810329-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1810408-004	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1762866)									
EM1810294-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	130	110	18.2	No Limit
EM1810329-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	410	430	3.81	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1764414)									
EM1810329-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1764239)									
EM1810362-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1764239)									
EM1810362-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1764239)									
EM1810362-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1764239) - continued									
EM1810362-001	Anonymous	EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1764412)									
EM1810329-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1764412)									
EM1810329-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1764412)									
EM1810329-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1764412) - continued									
EM1810329-001	Anonymous	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1764412)									
EM1810329-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1764239)									
EM1810362-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1764413)									
EM1810329-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	330	380	13.5	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1764239)									
EM1810362-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1764413)									
EM1810329-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	200	230	10.8	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	530	600	13.1	No Limit

Page : 6 of 11
Work Order : EM1810388
Client : GHD PTY LTD
Project : 31350060910



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1764413) - continued									
EM1810329-001	Anonymous	EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1765571)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.9	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.0	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	89.1	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	89.2	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	92.5	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	96.4	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	97.3	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	91.3	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	88.5	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	94.4	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1765572)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	92.1	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1768174)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	78.1	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1769433)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	94.3	80	110
EK040T: Fluoride Total (QCLot: 1762866)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	82.5	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1764414)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	114	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1764239)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	79.4	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	78.5	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	78.3	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	78.5	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	82.7	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	82.4	74	114
EP074H: Naphthalene (QCLot: 1764239)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	92.4	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1764239)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	81.5	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	73.7	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1764239) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	79.0	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	78.4	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	81.3	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.0	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	83.4	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	80.7	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	93.1	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	83.9	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	97.3	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	78.2	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	87.4	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	90.6	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	73.5	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	80.3	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	80.3	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	85.1	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	74.7	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1764412)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	87.7	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	92.6	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	88.4	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	103	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	89.4	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	99.8	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	89.8	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	85.7	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	92.6	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1764412)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	102	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	85.5	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	89.3	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	88.6	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	98.4	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	84.3	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	93.4	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	80.4	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	95.0	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	92.0	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1764412)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	93.4	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	95.4	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	98.3	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	94.8	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	95.4	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	119	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	99.9	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	100	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	105	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	104	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	101	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	99.3	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	93.7	55	137
EP075-EM: Dibenzo(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	94.0	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	94.4	55	137
EP075I: Organochlorine Pesticides (QCLot: 1764412)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	94.2	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	96.1	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	100	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	96.8	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	95.6	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	91.9	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	95.5	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	101	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	104	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	99.8	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	104	63	136
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	103	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	94.8	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	100	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	100.0	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	104	66	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	106	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	106	63	139
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	102	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	99.5	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1764239)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	81.4	69	114

Method Blank (MB) Report

Spike

Recovery Limits (%)

Matrix Spike (MS) Report

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1765571)							
EM1810338-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	90.0	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.8	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	96.5	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	92.1	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	79.5	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	94.5	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	82.3	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	91.1	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1765572)							
EM1810338-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	93.4	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1768174)							
EM1810361-003	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	61.7	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1769433)							
EM1810361-003	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	101	77	113
EK040T: Fluoride Total (QCLot: 1762866)							
EM1810295-001	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	104	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1764414)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1764414) - continued							
EM1810362-021	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	99.4	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1764239)							
EM1810362-011	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	64.0	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	62.4	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1764239)							
EM1810362-011	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	58.8	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	61.5	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	67.7	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1764412)							
EM1810362-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	87.7	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	91.3	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	75.2	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1764412)							
EM1810362-001	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	80.3	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	74.1	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1764412)							
EM1810362-001	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	79.1	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	108	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1764239)							
EM1810362-011	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	59.0	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1764413)							
EM1810362-011	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	106	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	113	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	99.5	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1764239)							
EM1810362-011	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	58.2	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1764413)							
EM1810362-011	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	107	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	106	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	99.2	44	126

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1810388	Page	: 1 of 7
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 28-Jun-2018
Site	: ----	Issue Date	: 04-Jul-2018
Sampler	: KORY AUCH / ?	No. of samples received	: 4
Order number	:	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m		27-Jun-2018	02-Jul-2018	04-Jul-2018	✓	02-Jul-2018	02-Jul-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m		27-Jun-2018	----	----	----	29-Jun-2018	11-Jul-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m		27-Jun-2018	02-Jul-2018	24-Dec-2018	✓	02-Jul-2018	24-Dec-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m		27-Jun-2018	02-Jul-2018	25-Jul-2018	✓	03-Jul-2018	25-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m		27-Jun-2018	02-Jul-2018	25-Jul-2018	✓	02-Jul-2018	09-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m		27-Jun-2018	02-Jul-2018	11-Jul-2018	✓	03-Jul-2018	16-Jul-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m		27-Jun-2018	29-Jun-2018	25-Jul-2018	✓	02-Jul-2018	25-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m		27-Jun-2018	29-Jun-2018	11-Jul-2018	✓	29-Jun-2018	08-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m		27-Jun-2018	29-Jun-2018	04-Jul-2018	✓	29-Jun-2018	04-Jul-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m		27-Jun-2018	29-Jun-2018	04-Jul-2018	✓	29-Jun-2018	04-Jul-2018	✓



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m	27-Jun-2018	29-Jun-2018	04-Jul-2018	✓	29-Jun-2018	04-Jul-2018	✓	
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m	27-Jun-2018	29-Jun-2018	11-Jul-2018	✓	29-Jun-2018	08-Aug-2018	✓	
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m	27-Jun-2018	29-Jun-2018	11-Jul-2018	✓	29-Jun-2018	08-Aug-2018	✓	
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m	27-Jun-2018	29-Jun-2018	11-Jul-2018	✓	29-Jun-2018	08-Aug-2018	✓	
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m	27-Jun-2018	29-Jun-2018	11-Jul-2018	✓	29-Jun-2018	08-Aug-2018	✓	
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m	27-Jun-2018	29-Jun-2018	04-Jul-2018	✓	29-Jun-2018	04-Jul-2018	✓	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH011_0.5m, NEL-ENV-BH011_1.5m	27-Jun-2018	29-Jun-2018	04-Jul-2018	✓	29-Jun-2018	04-Jul-2018	✓	



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Page : 5 of 7
 Work Order : EM1810388
 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CERTIFICATE OF ANALYSIS

Work Order : **EM1810580**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **ML**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **6**
No. of samples analysed : **5**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 03-Jul-2018 09:25
Date Analysis Commenced : 04-Jul-2018
Issue Date : 10-Jul-2018 13:27



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- WG035F: EM1810790 #13 Poor matrix spike recovery for dissolved mercury due to sample matrix. Confirmed by re-extraction and re-analysis.
- Samples were filtered through a 0.45um filter prior to the dissolved metals analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH141_0.2m	NEL-BH141_0.75m	----	----	----
Client sampling date / time					02-Jul-2018 00:00	02-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1810580-001	EM1810580-002	-----	-----	-----
					Result	Result	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.2	7.0	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.2	21.3	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	9	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		10	11	----	----	----
Lead	7439-92-1	5	mg/kg		24	15	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		12	15	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		49	22	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		220	330	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH141_0.2m	NEL-BH141_0.75m	----	----	----
Client sampling date / time					02-Jul-2018 00:00	02-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1810580-001	EM1810580-002	-----	-----	-----
				Result	Result		----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH141_0.2m	NEL-BH141_0.75m	----	----	----
				Client sampling date / time	02-Jul-2018 00:00	02-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1810580-001	EM1810580-002	-----	-----	-----
					Result	Result	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH141_0.2m	NEL-BH141_0.75m	----	----	----
Client sampling date / time				02-Jul-2018 00:00	02-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1810580-001	EM1810580-002	-----	-----	-----
				Result	Result	----	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH141_0.2m	NEL-BH141_0.75m	----	----	----
Client sampling date / time					02-Jul-2018 00:00	02-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1810580-001	EM1810580-002	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		85.5	95.4	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		81.5	83.0	----	----	----
Toluene-D8	2037-26-5	0.1	%		77.6	82.0	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		79.7	85.8	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		90.9	94.5	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		78.7	80.5	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		94.4	97.3	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		82.1	86.0	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		81.6	87.0	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		94.1	103	----	----	----
Anthracene-d10	1719-06-8	0.025	%		99.6	105	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		111	120	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB126	FB126	TB126	----	----
Client sampling date / time				02-Jul-2018 00:00	02-Jul-2018 00:00	02-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810580-004	EM1810580-005	EM1810580-006	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.18	5.77	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB126	FB126	TB126	----	----
Client sampling date / time					02-Jul-2018 00:00	02-Jul-2018 00:00	02-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810580-004	EM1810580-005	EM1810580-006	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2,4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB126	FB126	TB126	----	----
Client sampling date / time				02-Jul-2018 00:00	02-Jul-2018 00:00	02-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810580-004	EM1810580-005	EM1810580-006	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB126	FB126	TB126	----	----
Client sampling date / time					02-Jul-2018 00:00	02-Jul-2018 00:00	02-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810580-004	EM1810580-005	EM1810580-006	-----	-----
				Result	Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		75.2	76.6	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		99.1	99.2	----	----	----
Toluene-D8	2037-26-5	5	%		102	97.6	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		104	99.0	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		28.6	31.1	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		68.8	70.5	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		70.6	67.4	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		83.2	82.3	----	----	----
Anthracene-d10	1719-06-8	1.0	%		86.1	85.9	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		95.6	94.9	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB126	FB126	TB126	----	----
Client sampling date / time					02-Jul-2018 00:00	02-Jul-2018 00:00	02-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810580-004	EM1810580-005	EM1810580-006	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		32.4	31.5	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		78.9	74.6	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		81.4	78.3	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		93.7	88.1	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		94.5	91.0	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		100	97.4	----	----	----
Anthracene-d10	1719-06-8	0.25	%		100.0	99.9	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		115	114	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		96.6	96.5	98.0	----	----
Toluene-D8	2037-26-5	2	%		92.8	88.9	92.2	----	----
4-Bromofluorobenzene	460-00-4	2	%		113	109	110	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		<i>Recovery Limits (%)</i>	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		Address: 2 - 4 Westall Rd, Springvale		Lab Contact: Shirley LeCornu		PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line.																							
Project North East Link - Contamination				Contact Email David.Quinn@ghd.com		Quote No./GHD Reference ME124/18		Container		Analyses Required																							
GHD Contact David Quinn		Standard TAT		Sample I.D.		Date		Time		Composite Sample		Sample Matrix S: Soil SL: Sludge W: Water A: Air GW: Groundwater		Preservative		Type J: soil jar B: bag V: vial G: glass bottle P: plastic bottle		Number		Volume (mL)		HOLD											

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Wednesday, 4 July 2018 11:32 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: EM1810580, EM1810581 - GHD - 31350060910

Hi Shirley,

Please analyse the following at standard TAT:

EM1810580:

NEL-BH141_0.2m = IWRG621
NEL-BH141_0.75m = IWRG621

RB126 = IWRG621 water equivalent
FB126 = IWRG621 water equivalent
TB126 = Volatile TPH/BTEX

EM1810581:

NEL-BH172_0.5m = IWRG621
NEL-BH177_0.5m = IWRG621
NEL-BH177_1.0m = IWRG621

RB125 = IWRG621 water equivalent
FB125 = IWRG621 water equivalent
TB125 = Volatile TPH/BTEX

Regards,

Kory Auch

GHD

T: 03 8687 8948 | **V:** 318948 | **M:** 0478 797 000 | **E:** kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Wednesday, 4 July 2018 9:13 AM
To: David Quinn <David.Quinn@ghd.com>; Kory Auch <Kory.Auch@ghd.com>
Subject: FW: EM1810580, EM1810581 - GHD - 31350060910

Hi David

Please let me know analysis required for the attached, when you get a chance.

Thanks

Shirley

QUALITY CONTROL REPORT

Work Order	: EM1810580	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 03-Jul-2018
Order number	: ----	Date Analysis Commenced	: 04-Jul-2018
C-O-C number	: ----	Issue Date	: 10-Jul-2018
Sampler	: ML		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 6		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1781092)									
EM1810576-007	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.4	7.4	0.00	0% - 20%
EM1810613-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	4.7	4.6	2.15	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1776384)									
EM1810576-001	Anonymous	EA055: Moisture Content	----	0.1	%	20.3	20.6	1.56	0% - 20%
EM1810576-018	Anonymous	EA055: Moisture Content	----	0.1	%	8.8	9.0	1.74	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1778479)									
EM1810580-001	NEL-BH141_0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	13	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	10	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	24	24	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	49	48	0.00	No Limit
EM1810675-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	22	27	20.2	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	41	37	11.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	40	41	2.82	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1778479) - continued									
EM1810675-005	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	63	62	2.15	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1778478)									
EM1810580-001	NEL-BH141_0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810675-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1778974)									
EM1810576-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810576-016	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1779283)									
EM1810580-001	NEL-BH141_0.2m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1810671-015	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1778550)									
EM1810580-001	NEL-BH141_0.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	220	210	5.10	No Limit
EM1810671-015	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	240	170	32.1	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1778208)									
EM1810580-001	NEL-BH141_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810657-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1777385)									
EM1810580-001	NEL-BH141_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1777385)									
EM1810580-001	NEL-BH141_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1777385)									
EM1810580-001	NEL-BH141_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1777385) - continued									
EM1810580-001	NEL-BH141_0.2m	EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1778201)									
EM1810580-001	NEL-BH141_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1810657-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1778201)									
EM1810580-001	NEL-BH141_0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1778201) - continued									
EM1810657-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1778201)									
EM1810580-001	NEL-BH141_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810657-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	0.7	0.7	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1778201) - continued									
EM1810657-002	Anonymous	EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1778201)									
EM1810580-001	NEL-BH141_0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1810657-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

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 Work Order : EM1810580
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1778201) - continued									
EM1810657-002	Anonymous	EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1777385)									
EM1810580-001	NEL-BH141_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1778207)									
EM1810580-001	NEL-BH141_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1810657-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1777385)									
EM1810580-001	NEL-BH141_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1778207)									
EM1810580-001	NEL-BH141_0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1810657-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1778154)									
EM1810539-029	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.55	5.54	0.180	0% - 20%
EM1810539-022	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.39	7.43	0.540	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1781884)									
EM1810468-009	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1810788-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1781884) - continued									
EM1810788-003	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.155	0.154	0.00	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.008	0.006	14.7	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.015	0.014	0.00	0% - 50%
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.028	0.027	0.00	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.024	0.021	9.80	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1781887)									
EM1810580-004	RB126	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1781885)									
EM1810468-009	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1810788-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1785464)									
EM1810468-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1810581-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1778892)									
EM1810549-010	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1810699-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.007	0.007	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1778156)									
EM1810539-029	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.7	0.6	0.00	No Limit
EM1810539-022	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.9	1.9	0.00	0% - 50%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1777954)									
EM1810576-020	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1810671-032	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1777954)									
EM1810576-020	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1777954) - continued									
EM1810576-020	Anonymous	EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1810671-032	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1777954)									
EM1810576-020	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1810671-032	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1777954)									
EM1810576-020	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1810671-032	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1777955)									
EM1810576-020	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1810671-032	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1777955)									
EM1810576-020	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1810671-032	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1777955)									
EM1810576-020	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						

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 Work Order : EM1810580
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1777955) - continued									
EM1810576-020	Anonymous	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1810671-032	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1778479)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	84.2	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	95.1	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	82.8	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	80.9	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	95.5	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	88.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	106	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	94.3	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	94.9	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	87.8	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1778478)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	96.0	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1778974)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	80.5	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1779283)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	93.4	80	110
EK040T: Fluoride Total (QCLot: 1778550)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	90.0	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1778208)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	81.2	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1777385)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	91.2	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	91.0	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	92.2	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	91.6	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	93.3	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	92.4	74	114
EP074H: Naphthalene (QCLot: 1777385)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	100	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1777385)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	80.1	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	85.9	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1777385) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	89.0	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	86.5	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	97.6	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	95.1	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	91.4	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	85.8	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	101	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	96.8	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	88.4	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	95.4	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	98.3	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	81.1	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	93.4	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	89.7	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	94.1	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	79.9	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1778201)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	102	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	111	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	103	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	121	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	103	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	117	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	107	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	104	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	112	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1778201)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	117	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	101	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	110	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	111	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	114	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	118	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	102	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	98.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	109	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	92.4	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1778201)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	107	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	112	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	111	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	109	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	111	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	122	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	111	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	108	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	114	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	111	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	113	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	110	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	104	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	102	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	103	55	137
EP075I: Organochlorine Pesticides (QCLot: 1778201)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	109	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	108	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	112	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	111	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	112	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	109	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	110	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	112	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	112	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	112	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	115	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	110	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	104	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	119	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	114	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	111	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	112	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	112	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	108	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	107	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1777385)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	86.2	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1781884)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.9	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.2	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.2	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.2	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	97.1	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	101	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	109	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	99.3	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	102	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1781887)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	105	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1781885)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	89.1	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1785464)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	104	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1778892)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	90.0	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1778156)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	107	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1778289)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	70.2	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1777954)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1777954) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	105	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1777954)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	102	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	95.1	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	102	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	96.3	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	100	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	97.3	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	96.4	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	94.0	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	100	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	100	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	103	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	101	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	97.5	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	117	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1777954)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	108	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	107	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	102	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	110	62	119
EP074G: Trihalomethanes (QCLot: 1777954)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	99.6	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1778290)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	91.2	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	102	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	72.4	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	79.1	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	106	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	94.8	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	106	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	105	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	101	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	104	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	103	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	105	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	107	56	126

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1778290) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	103	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	101	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	106	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1778292)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	80.2	44	114
EP075-EM: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	79.4	53	121
EP075-EM: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	88.8	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	76.7	57	116
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	89.6	51	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	80.0	56	120
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	96.6	41	125
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	92.8	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	87.1	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1778292)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	34.2	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	77.8	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	66.1	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	86.5	53	123
EP075-EM: 2.4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	91.6	52	128
EP075-EM: 2.4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	120	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	30.6	13	60
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	87.2	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	94.6	55	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	117	32	135
EP075I: Organochlorine Pesticides (QCLot: 1778292)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	94.3	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	102	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	98.6	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	100	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	101	60	132
EP075-EM: 4.4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	106	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	100	59	130
EP075-EM: 4.4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	99.6	62	136
EP075-EM: 4.4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	101	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1777955)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	103	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1778291)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1778291) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	89.9	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	92.8	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	96.1	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1777955)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	101	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1778291)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	92.0	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	94.7	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	98.2	58	137
EP080: BTEXN (QCLot: 1777955)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	97.4	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	105	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	106	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	117	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	118	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	103	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1778479)							
EM1810580-002	NEL-BH141_0.75m	EG005T: Arsenic	7440-38-2	50 mg/kg	81.8	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	87.2	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	87.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	80.0	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	100	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	87.6	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	81.6	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	83.6	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1778478)							
EM1810580-002	NEL-BH141_0.75m	EG035T: Mercury	7439-97-6	5 mg/kg	99.8	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1778974)							
EM1810576-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	93.0	58	114



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1779283)							
EM1810580-002	NEL-BH141_0.75m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	92.1	77	113
EK040T: Fluoride Total (QCLot: 1778550)							
EM1810580-002	NEL-BH141_0.75m	EK040T: Fluoride	16984-48-8	400 mg/kg	88.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1778208)							
EM1810581-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	71.0	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1777385)							
EM1810580-002	NEL-BH141_0.75m	EP074-UT: Benzene	71-43-2	2 mg/kg	85.8	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	84.3	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1777385)							
EM1810580-002	NEL-BH141_0.75m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	94.4	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	83.9	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	85.6	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1778201)							
EM1810580-002	NEL-BH141_0.75m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	90.0	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	78.3	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	45.8	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1778201)							
EM1810580-002	NEL-BH141_0.75m	EP075-EM: Phenol	108-95-2	1 mg/kg	80.9	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	69.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1778201)							
EM1810580-002	NEL-BH141_0.75m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	98.3	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	90.0	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1777385)							
EM1810580-002	NEL-BH141_0.75m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	64.9	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1778207)							
EM1810581-003	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	89.1	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	93.5	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	90.0	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1777385)							
EM1810580-002	NEL-BH141_0.75m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	62.2	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1778207)							
EM1810581-003	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	90.5	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	92.8	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	89.0	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1781884)							
EM1810468-009	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	93.1	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	90.7	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	90.1	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.7	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	94.5	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	95.2	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1781885)							
EM1810580-004	RB126	EG035F: Mercury	7439-97-6	0.01 mg/L	92.8	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1785464)							
EM1810468-002	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	108	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1778892)							
EM1810549-011	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	76.9	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1778156)							
EM1810539-023	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	86.0	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1777954)							
EM1810580-004	RB126	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	77.9	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	87.1	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1777954)							
EM1810580-004	RB126	EP074: Chlorobenzene	108-90-7	20 µg/L	107	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1777955)							
EM1810580-004	RB126	EP080: C6 - C9 Fraction	----	280 µg/L	87.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1777955)							
EM1810580-004	RB126	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	87.7	44	122
EP080: BTEXN (QCLot: 1777955)							
EM1810580-004	RB126	EP080: Benzene	71-43-2	20 µg/L	91.4	68	130
		EP080: Toluene	108-88-3	20 µg/L	101	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1810580**

Page : 1 of 12

Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Project : **31350060910**
Site : **----**
Sampler : **ML**
Order number :

Laboratory : **Environmental Division Melbourne**
Telephone : **+61-3-8549 9630**
Date Samples Received : **03-Jul-2018**
Issue Date : **10-Jul-2018**
No. of samples received : **6**
No. of samples analysed : **5**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
RB126, FB126	----	----	----	05-Jul-2018	02-Jul-2018	3

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	11	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	11	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	06-Jul-2018	09-Jul-2018	✓	06-Jul-2018	06-Jul-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	----	----	----	04-Jul-2018	16-Jul-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	29-Dec-2018	✓	05-Jul-2018	29-Dec-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	30-Jul-2018	✓	05-Jul-2018	30-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	30-Jul-2018	✓	05-Jul-2018	12-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	06-Jul-2018	19-Jul-2018	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	30-Jul-2018	✓	06-Jul-2018	30-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	04-Jul-2018	09-Jul-2018	✓	05-Jul-2018	09-Jul-2018	✓
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	04-Jul-2018	09-Jul-2018	✓	05-Jul-2018	09-Jul-2018	✓
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	04-Jul-2018	09-Jul-2018	✓	05-Jul-2018	09-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	04-Jul-2018	09-Jul-2018	✓	05-Jul-2018	09-Jul-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	04-Jul-2018	09-Jul-2018	✔	05-Jul-2018	09-Jul-2018	✔	
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH141_0.2m, NEL-BH141_0.75m	02-Jul-2018	05-Jul-2018	16-Jul-2018	✔	05-Jul-2018	14-Aug-2018	✔	

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	FB126	02-Jul-2018	----	----	----	05-Jul-2018	02-Jul-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Natural (EG020B-F)	FB126	02-Jul-2018	----	----	----	06-Jul-2018	29-Dec-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F)	FB126	02-Jul-2018	----	----	----	09-Jul-2018	30-Jul-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	FB126	02-Jul-2018	----	----	----	09-Jul-2018	30-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)	FB126	02-Jul-2018	----	----	----	05-Jul-2018	16-Jul-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	FB126	02-Jul-2018	----	----	----	05-Jul-2018	30-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)	FB126	02-Jul-2018	05-Jul-2018	09-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)	FB126	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	16-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB126	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	16-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB126	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	16-Jul-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)	FB126	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	16-Jul-2018	✓



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB126, FB126	02-Jul-2018	05-Jul-2018	09-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) RB126, FB126	02-Jul-2018	05-Jul-2018	09-Jul-2018	✓	06-Jul-2018	14-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) RB126, FB126	02-Jul-2018	05-Jul-2018	09-Jul-2018	✓	06-Jul-2018	14-Aug-2018	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075-EM) RB126, FB126	02-Jul-2018	05-Jul-2018	09-Jul-2018	✓	06-Jul-2018	14-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) RB126, FB126	02-Jul-2018	05-Jul-2018	09-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB126, FB126, TB126	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	16-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) RB126, FB126	02-Jul-2018	05-Jul-2018	09-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB126, FB126, TB126	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	16-Jul-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) RB126, FB126, TB126	02-Jul-2018	05-Jul-2018	16-Jul-2018	✓	05-Jul-2018	16-Jul-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **✖** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	11	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	11	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1810581**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **MM/SH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **8**
No. of samples analysed : **6**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 03-Jul-2018 09:25
Date Analysis Commenced : 04-Jul-2018
Issue Date : 10-Jul-2018 08:21



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- WG035F: EM1810790 #13 Poor matrix spike recovery for dissolved mercury due to sample matrix. Confirmed by re-extraction and re-analysis.
- Samples were filtered through a 0.45um filter prior to the dissolved metals analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH172_0.5m	NEL-BH177_0.5m	NEL-BH177_1.0m	----	----
Client sampling date / time					29-Jun-2018 00:00	29-Jun-2018 00:00	29-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810581-001	EM1810581-003	EM1810581-004	-----	-----
				Result	Result	Result		----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.2	6.2	5.4	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		21.7	20.8	24.7	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		7	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Copper	7440-50-8	5	mg/kg		24	8	12	----	----
Lead	7439-92-1	5	mg/kg		32	14	14	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg		43	14	15	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	----	----
Zinc	7440-66-6	5	mg/kg		51	15	14	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		480	350	470	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH172_0.5m	NEL-BH177_0.5m	NEL-BH177_1.0m	----	----
Client sampling date / time				29-Jun-2018 00:00	29-Jun-2018 00:00	29-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810581-001	EM1810581-003	EM1810581-004	-----	-----
				Result	Result	Result	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH172_0.5m	NEL-BH177_0.5m	NEL-BH177_1.0m	----	----
Client sampling date / time					29-Jun-2018 00:00	29-Jun-2018 00:00	29-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810581-001	EM1810581-003	EM1810581-004	-----	-----
					Result	Result	Result	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH172_0.5m	NEL-BH177_0.5m	NEL-BH177_1.0m	----	----
Client sampling date / time				29-Jun-2018 00:00	29-Jun-2018 00:00	29-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810581-001	EM1810581-003	EM1810581-004	-----	-----
				Result	Result	Result	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH172_0.5m	NEL-BH177_0.5m	NEL-BH177_1.0m	----	----
Client sampling date / time					29-Jun-2018 00:00	29-Jun-2018 00:00	29-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810581-001	EM1810581-003	EM1810581-004	-----	-----
				Result	Result	Result		----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		105	90.3	86.0	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		81.2	81.4	79.2	----	----
Toluene-D8	2037-26-5	0.1	%		82.8	80.6	74.2	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		84.1	81.8	80.1	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		97.3	86.4	93.0	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		82.7	71.8	75.4	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		99.4	85.8	73.0	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		87.5	77.7	83.4	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		87.1	79.0	81.3	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		106	93.3	92.2	----	----
Anthracene-d10	1719-06-8	0.025	%		111	96.8	96.1	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		129	111	110	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB125	FB125	TB125	----	----
Client sampling date / time					29-Jun-2018 00:00	29-Jun-2018 00:00	29-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810581-006	EM1810581-007	EM1810581-008	-----	-----
				Result	Result	Result		----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		5.66	5.53	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium									
Hexavalent Chromium	18540-29-9	0.01	mg/L		<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
^ Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L		<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB125	FB125	TB125	----	----
Client sampling date / time					29-Jun-2018 00:00	29-Jun-2018 00:00	29-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810581-006	EM1810581-007	EM1810581-008	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB125	FB125	TB125	----	----
Client sampling date / time				29-Jun-2018 00:00	29-Jun-2018 00:00	29-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810581-006	EM1810581-007	EM1810581-008	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB125	FB125	TB125	----	----
Client sampling date / time					29-Jun-2018 00:00	29-Jun-2018 00:00	29-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810581-006	EM1810581-007	EM1810581-008	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		83.1	79.5	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		102	102	----	----	----
Toluene-D8	2037-26-5	5	%		103	103	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		108	106	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		32.9	28.3	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		77.1	66.1	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		70.3	59.4	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		91.0	78.9	----	----	----
Anthracene-d10	1719-06-8	1.0	%		94.1	80.3	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		102	90.0	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB125	FB125	TB125	----	----
Client sampling date / time					29-Jun-2018 00:00	29-Jun-2018 00:00	29-Jun-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810581-006	EM1810581-007	EM1810581-008	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		23.2	30.4	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		54.7	74.6	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		53.4	77.4	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		62.4	87.4	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		64.3	91.2	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		67.9	94.6	----	----	----
Anthracene-d10	1719-06-8	0.25	%		69.3	99.0	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		77.8	113	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		98.7	99.0	96.0	----	----
Toluene-D8	2037-26-5	2	%		93.6	93.4	93.7	----	----
4-Bromofluorobenzene	460-00-4	2	%		117	113	114	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Wednesday, 4 July 2018 11:32 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: EM1810580, EM1810581 - GHD - 31350060910

Hi Shirley,

Please analyse the following at standard TAT:

EM1810580:

NEL-BH141_0.2m = IWRG621
NEL-BH141_0.75m = IWRG621

RB126 = IWRG621 water equivalent
FB126 = IWRG621 water equivalent
TB126 = Volatile TPH/BTEX

EM1810581:

NEL-BH172_0.5m = IWRG621
NEL-BH177_0.5m = IWRG621
NEL-BH177_1.0m = IWRG621

RB125 = IWRG621 water equivalent
FB125 = IWRG621 water equivalent
TB125 = Volatile TPH/BTEX

Regards,

Kory Auch

GHD

T: 03 8687 8948 | **V:** 318948 | **M:** 0478 797 000 | **E:** kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Wednesday, 4 July 2018 9:13 AM
To: David Quinn <David.Quinn@ghd.com>; Kory Auch <Kory.Auch@ghd.com>
Subject: FW: EM1810580, EM1810581 - GHD - 31350060910

Hi David

Please let me know analysis required for the attached, when you get a chance.

Thanks

Shirley

QUALITY CONTROL REPORT

Work Order	: EM1810581	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
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Project	: 31350060910	Date Samples Received	: 03-Jul-2018
Order number	: ----	Date Analysis Commenced	: 04-Jul-2018
C-O-C number	: ----	Issue Date	: 10-Jul-2018
Sampler	: MM/SH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 8		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1778238)									
EM1810576-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.8	6.8	0.00	0% - 20%
EM1810625-008	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.6	7.5	1.32	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1778249)									
EM1810581-001	NEL-BH172_0.5m	EA055: Moisture Content	----	0.1	%	21.7	20.1	8.02	0% - 20%
EM1810689-005	Anonymous	EA055: Moisture Content	----	0.1	%	12.7	12.7	0.00	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1778479)									
EM1810580-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	13	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	10	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	24	24	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	49	48	0.00	No Limit
EM1810675-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	22	27	20.2	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	41	37	11.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	40	41	2.82	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1778479) - continued									
EM1810675-005	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	63	62	2.15	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1778478)									
EM1810580-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810675-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1778974)									
EM1810576-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810576-016	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1779283)									
EM1810580-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1810671-015	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1778550)									
EM1810580-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	220	210	5.10	No Limit
EM1810671-015	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	240	170	32.1	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1778208)									
EM1810580-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810657-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1777385)									
EM1810580-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1777385)									
EM1810580-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1777385)									
EM1810580-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1777385) - continued									
EM1810580-001	Anonymous	EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1778201)									
EM1810580-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1810657-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1778201)									
EM1810580-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1778201) - continued									
EM1810657-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1778201)									
EM1810580-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810657-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	0.7	0.7	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1778201) - continued									
EM1810657-002	Anonymous	EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1778201)									
EM1810580-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1810657-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1778201) - continued									
EM1810657-002	Anonymous	EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1777385)									
EM1810580-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1778207)									
EM1810580-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1810657-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1777385)									
EM1810580-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1778207)									
EM1810580-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1810657-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1778154)									
EM1810539-029	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.55	5.54	0.180	0% - 20%
EM1810539-022	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.39	7.43	0.540	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1781884)									
EM1810468-009	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1810788-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1781884) - continued									
EM1810788-003	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.155	0.154	0.00	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.008	0.006	14.7	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.015	0.014	0.00	0% - 50%
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.028	0.027	0.00	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.024	0.021	9.80	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1781887)									
EM1810580-004	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1781885)									
EM1810468-009	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1810788-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1785464)									
EM1810468-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1810581-006	RB125	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1778892)									
EM1810549-010	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1810699-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.007	0.007	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1778156)									
EM1810539-029	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.7	0.6	0.00	No Limit
EM1810539-022	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.9	1.9	0.00	0% - 50%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1777954)									
EM1810576-020	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1810671-032	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1777954)									
EM1810576-020	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1777954) - continued									
EM1810576-020	Anonymous	EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1810671-032	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1777954)									
EM1810576-020	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1810671-032	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1777954)									
EM1810576-020	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1810671-032	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1777955)									
EM1810576-020	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1810671-032	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1777955)									
EM1810576-020	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1810671-032	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1777955)									
EM1810576-020	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						

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 Work Order : EM1810581
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1777955) - continued									
EM1810576-020	Anonymous	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1810671-032	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1778479)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	84.2	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	95.1	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	82.8	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	80.9	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	95.5	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	88.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	106	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	94.3	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	94.9	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	87.8	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1778478)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	96.0	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1778974)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	80.5	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1779283)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	93.4	80	110
EK040T: Fluoride Total (QCLot: 1778550)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	90.0	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1778208)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	81.2	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1777385)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	91.2	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	91.0	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	92.2	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	91.6	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	93.3	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	92.4	74	114
EP074H: Naphthalene (QCLot: 1777385)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	100	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1777385)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	80.1	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	85.9	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1777385) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	89.0	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	86.5	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	97.6	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	95.1	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	91.4	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	85.8	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	101	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	96.8	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	88.4	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	95.4	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	98.3	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	81.1	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	93.4	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	89.7	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	94.1	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	79.9	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1778201)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	102	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	111	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	103	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	121	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	103	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	117	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	107	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	104	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	112	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1778201)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	117	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	101	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	110	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	111	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	114	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	118	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	102	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	98.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	109	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	92.4	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1778201)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	107	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	112	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	111	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	109	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	111	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	122	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	111	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	108	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	114	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	111	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	113	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	110	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	104	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	102	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	103	55	137
EP075I: Organochlorine Pesticides (QCLot: 1778201)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	109	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	108	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	112	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	111	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	112	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	109	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	110	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	112	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	112	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	112	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	115	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	110	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	104	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	119	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	114	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	111	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	112	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	112	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	108	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	107	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1777385)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	86.2	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1781884)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.9	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.2	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.2	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.2	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	97.1	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	101	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	109	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	99.3	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	102	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1781887)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	105	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1781885)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	89.1	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1785464)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	104	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1778892)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	90.0	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1778156)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	107	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1778289)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	70.2	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1777954)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1777954) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	105	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1777954)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	102	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	95.1	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	102	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	96.3	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	100	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	97.3	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	96.4	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	94.0	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	100	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	100	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	103	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	101	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	97.5	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	117	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1777954)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	108	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	107	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	102	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	110	62	119
EP074G: Trihalomethanes (QCLot: 1777954)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	99.6	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1778290)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	91.2	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	102	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	72.4	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	79.1	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	106	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	94.8	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	106	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	105	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	101	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	104	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	103	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	105	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	107	56	126

Method Blank (MB) Report

Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
	LCS	Low	High

Method: Compound	CAS Number	LOR	Unit	Result	Concentration	EPA Method (µg/L)	Recovery Range (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1778290) - continued							
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	103	123
EP075(SIM): Dibenz(a,h.)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	101	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	106	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1778292)							
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	80.2	114
EP075-EM: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	79.4	121
EP075-EM: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	88.8	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	76.7	116
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	89.6	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	80.0	120
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	96.6	125
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	92.8	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	87.1	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1778292)							
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	34.2	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	77.8	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	66.1	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	86.5	123
EP075-EM: 2.4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	91.6	128
EP075-EM: 2.4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	120	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	30.6	60
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	87.2	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	94.6	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	117	135
EP075I: Organochlorine Pesticides (QCLot: 1778292)							
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	94.3	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	102	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	98.6	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	100	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	101	132
EP075-EM: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	106	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	100	130
EP075-EM: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	99.6	136
EP075-EM: 4.4`-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	101	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1777955)							
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	103	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1778291)							



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1778291) - continued								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	89.9	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	92.8	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	96.1	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1777955)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	101	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1778291)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	92.0	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	94.7	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	98.2	58	137
EP080: BTEXN (QCLot: 1777955)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	97.4	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	105	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	106	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	117	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	118	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	103	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1778479)							
EM1810580-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	81.8	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	87.2	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	87.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	80.0	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	100	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	87.6	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	81.6	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	83.6	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1778478)							
EM1810580-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	99.8	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1778974)							
EM1810576-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	93.0	58	114



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1779283)							
EM1810580-002	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	92.1	77	113
EK040T: Fluoride Total (QCLot: 1778550)							
EM1810580-002	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	88.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1778208)							
EM1810581-001	NEL-BH172_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	71.0	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1777385)							
EM1810580-002	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	85.8	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	84.3	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1777385)							
EM1810580-002	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	94.4	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	83.9	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	85.6	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1778201)							
EM1810580-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	90.0	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	78.3	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	45.8	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1778201)							
EM1810580-002	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	80.9	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	69.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1778201)							
EM1810580-002	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	98.3	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	90.0	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1777385)							
EM1810580-002	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	64.9	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1778207)							
EM1810581-003	NEL-BH177_0.5m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	89.1	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	93.5	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	90.0	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1777385)							
EM1810580-002	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	62.2	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1778207)							
EM1810581-003	NEL-BH177_0.5m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	90.5	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	92.8	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	89.0	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1781884)							
EM1810468-009	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	93.1	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	90.7	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	90.1	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.7	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	94.5	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	95.2	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1781885)							
EM1810580-004	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	92.8	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1785464)							
EM1810468-002	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	108	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1778892)							
EM1810549-011	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	76.9	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1778156)							
EM1810539-023	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	86.0	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1777954)							
EM1810580-004	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	77.9	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	87.1	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1777954)							
EM1810580-004	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	107	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1777955)							
EM1810580-004	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	87.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1777955)							
EM1810580-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	87.7	44	122
EP080: BTEXN (QCLot: 1777955)							
EM1810580-004	Anonymous	EP080: Benzene	71-43-2	20 µg/L	91.4	68	130
		EP080: Toluene	108-88-3	20 µg/L	101	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1810581	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 03-Jul-2018
Site	: ----	Issue Date	: 10-Jul-2018
Sampler	: MM/SH	No. of samples received	: 8
Order number	:	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
RB125, FB125	----	----	----	05-Jul-2018	29-Jun-2018	6

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	11	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	11	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	06-Jul-2018	✓	05-Jul-2018	05-Jul-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	----	----	----	05-Jul-2018	13-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	26-Dec-2018	✓	05-Jul-2018	26-Dec-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	27-Jul-2018	✓	05-Jul-2018	27-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	27-Jul-2018	✓	05-Jul-2018	12-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	13-Jul-2018	✓	06-Jul-2018	19-Jul-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	27-Jul-2018	✓	06-Jul-2018	27-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	13-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	04-Jul-2018	06-Jul-2018	✓	05-Jul-2018	06-Jul-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	04-Jul-2018	06-Jul-2018	✓	05-Jul-2018	06-Jul-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	04-Jul-2018	06-Jul-2018	✓	05-Jul-2018	06-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	13-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	13-Jul-2018	✔	05-Jul-2018	14-Aug-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	13-Jul-2018	✔	05-Jul-2018	14-Aug-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	13-Jul-2018	✔	05-Jul-2018	14-Aug-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	04-Jul-2018	06-Jul-2018	✔	05-Jul-2018	06-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	13-Jul-2018	✔	05-Jul-2018	14-Aug-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	04-Jul-2018	06-Jul-2018	✔	05-Jul-2018	06-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH172_0.5m, NEL-BH177_1.0m	NEL-BH177_0.5m,	29-Jun-2018	05-Jul-2018	13-Jul-2018	✔	05-Jul-2018	14-Aug-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) RB125,	FB125	29-Jun-2018	----	----	----	05-Jul-2018	29-Jun-2018	✘
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Natural (EG020B-F) RB125,	FB125	29-Jun-2018	----	----	----	06-Jul-2018	26-Dec-2018	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F) RB125,	FB125	29-Jun-2018	----	----	----	09-Jul-2018	27-Jul-2018	✔
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB125,	FB125	29-Jun-2018	----	----	----	09-Jul-2018	27-Jul-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) RB125,	FB125	29-Jun-2018	----	----	----	05-Jul-2018	13-Jul-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB125,	FB125	29-Jun-2018	----	----	----	05-Jul-2018	27-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB125,	FB125	29-Jun-2018	05-Jul-2018	06-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB125,	FB125	29-Jun-2018	05-Jul-2018	13-Jul-2018	✓	05-Jul-2018	13-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB125,	FB125	29-Jun-2018	05-Jul-2018	13-Jul-2018	✓	05-Jul-2018	13-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB125,	FB125	29-Jun-2018	05-Jul-2018	13-Jul-2018	✓	05-Jul-2018	13-Jul-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB125,	FB125	29-Jun-2018	05-Jul-2018	13-Jul-2018	✓	05-Jul-2018	13-Jul-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB125,	FB125	29-Jun-2018	05-Jul-2018	06-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB125,	FB125	29-Jun-2018	05-Jul-2018	06-Jul-2018	✓	06-Jul-2018	14-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB125,	FB125	29-Jun-2018	05-Jul-2018	06-Jul-2018	✓	06-Jul-2018	14-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB125,	FB125	29-Jun-2018	05-Jul-2018	06-Jul-2018	✓	06-Jul-2018	14-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB125,	FB125	29-Jun-2018	05-Jul-2018	06-Jul-2018	✓	05-Jul-2018	14-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB125, TB125	FB125,	29-Jun-2018	05-Jul-2018	13-Jul-2018	✓	05-Jul-2018	13-Jul-2018	✓

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 Work Order : EM1810581
 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
RB125,	FB125	29-Jun-2018	05-Jul-2018	06-Jul-2018	✔	05-Jul-2018	14-Aug-2018	✔
Amber VOC Vial - Sulfuric Acid (EP080)								
RB125,	FB125,	29-Jun-2018	05-Jul-2018	13-Jul-2018	✔	05-Jul-2018	13-Jul-2018	✔
TB125								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
RB125,	FB125,	29-Jun-2018	05-Jul-2018	13-Jul-2018	✔	05-Jul-2018	13-Jul-2018	✔
TB125								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	11	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	11	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : EM1810779 Amendment : 1 Client : GHD PTY LTD Contact : MR DAVID QUINN Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001 Telephone : ---- Project : 31350060910 Order number : ---- C-O-C number : ---- Sampler : SCOTT HILLIARD Site : North East Link - Contamination Quote number : ME/124/18 - North East Link No. of samples received : 11 No. of samples analysed : 7	Page : 1 of 14 Laboratory : Environmental Division Melbourne Contact : Shirley LeCornu Address : 4 Westall Rd Springvale VIC Australia 3171 Telephone : +61-3-8549 9630 Date Samples Received : 05-Jul-2018 10:45 Date Analysis Commenced : 09-Jul-2018 Issue Date : 01-Aug-2018 13:18
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Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Amendment (01/08/2018): This report has been amended following changes to the analytical data reported. The quality system is being utilised to resolve this issue. The specific data affected includes sample EM1810779_4 PCB results.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH009_0.5m	NEL-EF-BH009_1.5m	NEL-BH143_0.2m	NEL-BH143_1.0m	----
Client sampling date / time					04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810779-002	EM1810779-004	EM1810779-008	EM1810779-010	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.8	7.0	4.6	6.2	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		16.2	23.8	13.9	20.0	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		18	<5	11	8	----
Lead	7439-92-1	5	mg/kg		17	7	26	11	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		51	9	14	15	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		44	<5	55	26	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		340	170	230	290	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH009_0.5m	NEL-EF-BH009_1.5m	NEL-BH143_0.2m	NEL-BH143_1.0m	----
Client sampling date / time					04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810779-002	EM1810779-004	EM1810779-008	EM1810779-010	-----
					Result	Result	Result	Result	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH009_0.5m	NEL-EF-BH009_1.5m	NEL-BH143_0.2m	NEL-BH143_1.0m	----
Client sampling date / time					04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810779-002	EM1810779-004	EM1810779-008	EM1810779-010	-----
				Result	Result	Result	Result	----	

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH009_0.5m	NEL-EF-BH009_1.5m	NEL-BH143_0.2m	NEL-BH143_1.0m	----
Client sampling date / time					04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810779-002	EM1810779-004	EM1810779-008	EM1810779-010	-----
				Result	Result	Result	Result	Result	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH009_0.5m	NEL-EF-BH009_1.5m	NEL-BH143_0.2m	NEL-BH143_1.0m	----
Client sampling date / time					04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810779-002	EM1810779-004	EM1810779-008	EM1810779-010	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		76.6	73.5	70.1	81.6	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		59.4	82.1	75.2	80.2	----
Toluene-D8	2037-26-5	0.1	%		65.5	86.7	83.2	65.5	----
4-Bromofluorobenzene	460-00-4	0.1	%		65.3	78.2	72.6	71.1	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		98.7	98.2	94.6	95.1	----
2-Chlorophenol-D4	93951-73-6	0.025	%		77.7	72.6	70.3	71.0	----
2,4,6-Tribromophenol	118-79-6	0.025	%		83.7	80.6	86.1	82.3	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		98.2	96.6	95.8	95.9	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		109	107	108	105	----
2-Fluorobiphenyl	321-60-8	0.025	%		110	105	105	105	----
Anthracene-d10	1719-06-8	0.025	%		103	113	108	107	----
4-Terphenyl-d14	1718-51-0	0.025	%		120	124	127	122	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB128	FB128	TB128	----	----
Client sampling date / time				04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810779-005	EM1810779-006	EM1810779-007	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.64	6.34	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB128	FB128	TB128	----	----
Client sampling date / time					04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810779-005	EM1810779-006	EM1810779-007	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB128	FB128	TB128	----	----
Client sampling date / time				04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810779-005	EM1810779-006	EM1810779-007	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB128	FB128	TB128	----	----
Client sampling date / time				04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810779-005	EM1810779-006	EM1810779-007	-----	-----
				Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	97.6	98.2	----	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	5	%	98.1	101	----	----	----
Toluene-D8	2037-26-5	5	%	85.8	92.6	----	----	----
4-Bromofluorobenzene	460-00-4	5	%	74.8	91.9	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	21.3	21.4	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	54.4	57.5	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	84.6	77.9	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	60.2	62.5	----	----	----
Anthracene-d10	1719-06-8	1.0	%	87.8	84.3	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	95.0	94.0	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB128	FB128	TB128	----	----
Client sampling date / time					04-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810779-005	EM1810779-006	EM1810779-007	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		32.7	32.2	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		86.9	85.9	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		90.1	94.2	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		100	100	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		95.6	95.7	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		108	105	----	----	----
Anthracene-d10	1719-06-8	0.25	%		106	112	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		126	131	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		92.4	95.7	103	----	----
Toluene-D8	2037-26-5	2	%		85.1	88.9	93.1	----	----
4-Bromofluorobenzene	460-00-4	2	%		72.7	85.9	99.4	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 9 July 2018 8:22 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: ON HOLD-EM1810779-& EM1810780-GHD-NORTH EAST LINK CONTAMINATION
Attachments: 05072018174628-0001.pdf; 05072018174904-0001.pdf

Hi Shirley, hope you had a good weekend,

Please analyse the following at standard TAT:

EM1810779:

- 2 NEL-EF-BH009_0.5m = IWRG621
- 4 NEL-EF-BH009_1.5m = IWRG621
- 5 RB128 = IWRG621 water equivalent
- 6 FB128 = IWRG621 water equivalent
- 7 TB128 = Volatile TPH/BTEX
- 8 NEL-BH143_0.2m = IWRG621
- 10 NEL-BH143_1.0m = IWRG621

EM1810780:

NEL-BH142_0.2m = IWRG621
NEL-BH142_1.0m = IWRG621

RB127 = IWRG621 water equivalent
FB127 = IWRG621 water equivalent
TB127 = Volatile TPH/BTEX

NEL-BH166_0.5m = IWRG621
NEL-BH166_1.5m = IWRG621

I'll get working on those samples from Friday now.
Regards,

Kory Auch

GHD
T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

-----Original Message-----

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Friday, 6 July 2018 7:37 AM
To: Kory Auch <Kory.Auch@ghd.com>
Cc: David Quinn <David.Quinn@ghd.com>

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1810779

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number :</p> <p>C-O-C number : ----</p> <p>Site : North East Link - Contamination</p> <p>Sampler : SCOTT HILLIARD</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 4</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Dates

Date Samples Received : 05-Jul-2018 10:45	Issue Date : 09-Jul-2018
Client Requested Due : 16-Jul-2018	Scheduled Reporting Date : 16-Jul-2018
Date :	

Delivery Details

Mode of Delivery : Carrier	Security Seal : Intact.
No. of coolers/boxes : 1	Temperature : 1.3°C - Ice present
Receipt Detail :	No. of samples received / analysed : 11 / 7

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB128	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB128	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB128	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB128	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB128	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB128	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1810779-001	04-Jul-2018 00:00	NEL-EF-BH009_0.2m	✓		
EM1810779-002	04-Jul-2018 00:00	NEL-EF-BH009_0.5m		✓	✓
EM1810779-003	04-Jul-2018 00:00	NEL-EF-BH009_1.0m	✓		
EM1810779-004	04-Jul-2018 00:00	NEL-EF-BH009_1.5m		✓	✓
EM1810779-008	04-Jul-2018 00:00	NEL-BH143_0.2m		✓	✓
EM1810779-009	04-Jul-2018 00:00	NEL-BH143_0.5m	✓		
EM1810779-010	04-Jul-2018 00:00	NEL-BH143_1.0m		✓	✓
EM1810779-011	04-Jul-2018 00:00	NEL-BH143_1.5m	✓		



Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1810779-005	04-Jul-2018 00:00	RB128	✓	
EM1810779-006	04-Jul-2018 00:00	FB128	✓	
EM1810779-007	04-Jul-2018 00:00	TB128		✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✓ = Within holding time.

Method Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by PC Titrator							
FB128	Clear Plastic Bottle - Natural	----	04-Jul-2018	05-Jul-2018	✖	09-Jul-2018	✖
RB128	Clear Plastic Bottle - Natural	----	04-Jul-2018	05-Jul-2018	✖	09-Jul-2018	✖

[illegible]

QUALITY CONTROL REPORT

Work Order : **EM1810779**

Page : 1 of 17

Amendment : **1**

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **MR DAVID QUINN**

Contact : Shirley LeCornu

Address : **LEVEL 8, 180 LONSDALE ST
MELBOURNE VIC, AUSTRALIA 3001**

Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : ----

Telephone : +61-3-8549 9630

Project : 31350060910

Date Samples Received : 05-Jul-2018

Order number :

Date Analysis Commenced : 09-Jul-2018

C-O-C number : ----

Issue Date : 01-Aug-2018

Sampler : **SCOTT HILLIARD**

Site : North East Link - Contamination

Quote number : ME/124/18 - North East Link

No. of samples received : 11

No. of samples analysed : 7



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

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General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1785155)									
EM1810779-002	NEL-EF-BH009_0.5m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.8	7.7	1.29	0% - 20%
EM1810896-002	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.4	8.4	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1786856)									
EM1810779-002	NEL-EF-BH009_0.5m	EA055: Moisture Content	----	0.1	%	16.2	16.2	0.00	0% - 50%
EM1810855-003	Anonymous	EA055: Moisture Content	----	0.1	%	19.8	21.3	7.36	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1787811)									
EM1810779-002	NEL-EF-BH009_0.5m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	51	53	2.68	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	21	12.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	17	20	19.5	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	44	55	22.0	0% - 50%
EM1810896-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	28	29	3.65	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	8	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1787811) - continued									
EM1810896-002	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	8	9	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1787810)									
EM1810779-002	NEL-EF-BH009_0.5m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810896-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1787790)									
EM1810679-014	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810780-008	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1789113)									
EM1810780-008	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1810679-014	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1787014)									
EM1810779-002	NEL-EF-BH009_0.5m	EK040T: Fluoride	16984-48-8	40	mg/kg	340	330	0.00	No Limit
EM1810873-003	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	630	570	10.0	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1785192)									
EM1810779-002	NEL-EF-BH009_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1785186)									
EM1810779-002	NEL-EF-BH009_0.5m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1785186)									
EM1810779-002	NEL-EF-BH009_0.5m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1785186)									
EM1810779-002	NEL-EF-BH009_0.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1785186) - continued									
EM1810779-002	NEL-EF-BH009_0.5m	EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1785187)									
EM1810779-002	NEL-EF-BH009_0.5m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1785187)									
EM1810779-002	NEL-EF-BH009_0.5m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1785187)									
EM1810779-002	NEL-EF-BH009_0.5m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1785187) - continued									
EM1810779-002	NEL-EF-BH009_0.5m	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1785187)									
EM1810779-002	NEL-EF-BH009_0.5m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1785186)									
EM1810779-002	NEL-EF-BH009_0.5m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1785191)									
EM1810779-002	NEL-EF-BH009_0.5m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1785186)									
EM1810779-002	NEL-EF-BH009_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1785191)									
EM1810779-002	NEL-EF-BH009_0.5m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1785191) - continued									
EM1810779-002	NEL-EF-BH009_0.5m	EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1787508)									
EM1810779-006	FB128	EA005-P: pH Value	----	0.01	pH Unit	6.34	6.23	1.75	0% - 20%
EM1810874-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.12	7.14	0.280	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1787547)									
EM1810779-005	RB128	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1787548)									
EM1810903-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.023	0.022	5.88	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.024	0.024	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1810779-005	RB128	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1787546)									
EM1810382-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1810871-009	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1785464)									
EM1810468-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1810581-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1788156)									
EM1810779-005	RB128	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1810912-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.024	0.024	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1787507)									
EM1810882-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	2.2	2.3	0.00	0% - 20%
EM1810779-006	FB128	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1787440)									
EM1810779-005	RB128	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1787440)									
EM1810779-005	RB128	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1810882-003	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1787440)									
EM1810779-005	RB128	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074G: Trihalomethanes (QC Lot: 1787440)									
EM1810779-005	RB128	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1787441)									
EM1810779-005	RB128	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1810882-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1787441)									
EM1810779-005	RB128	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1810882-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1787441)									
EM1810779-005	RB128	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1810882-003	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1787811)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.8	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	91.9	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	98.3	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	88.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	88.1	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	98.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.0	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.6	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	97.1	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	96.3	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1787810)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	95.8	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1787790)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	90.6	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1789113)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	94.8	80	110
EK040T: Fluoride Total (QCLot: 1787014)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	86.8	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1785192)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	76.9	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1785186)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	117	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	86.9	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	118	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	105	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	96.1	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	83.1	74	114
EP074H: Naphthalene (QCLot: 1785186)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	104	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1785186)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	103	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	109	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1785186) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	106	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	112	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	107	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	108	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	115	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	119	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	103	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	109	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	74.7	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	85.9	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	108	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	72.4	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	110	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	103	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	102	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	101	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	103	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1785187)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	97.3	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	107	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	103	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	117	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	101	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	115	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	104	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	100	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	109	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1785187)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	115	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	96.3	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	102	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	108	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	115	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	105	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	103	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	105	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	114	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	105	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1785187)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	107	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	109	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	108	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	106	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	107	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	125	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	108	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	114	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	110	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	107	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	108	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	107	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	107	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	102	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	100	55	137
EP075I: Organochlorine Pesticides (QCLot: 1785187)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	106	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	106	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	107	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	108	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	110	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	107	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	107	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	108	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	109	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	108	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	110	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	109	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	101	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	83.4	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	115	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	107	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	107	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	110	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	109	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	106	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1785186)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	88.1	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787547)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	93.2	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787548)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	103	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	93.0	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.7	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	98.3	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	96.2	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1787546)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.4	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1785464)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	104	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1788156)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	91.7	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1787507)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1785049)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	82.0	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1787440)								



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1787440) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	105	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1787440)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	104	64	139
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	95.8	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	103	81	144
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	97.8	73	121
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	99.7	78	120
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	91.4	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	87.0	66	119
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	99.9	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	103	70	120
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	104	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	105	75	119
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	94.4	75	112
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	107	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	103	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1787440)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	106	82	114
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	101	76	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	103	82	112
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	98.2	62	119
EP074G: Trihalomethanes (QCLot: 1787440)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	99.6	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1785050)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	75.3	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	79.7	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	79.5	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	85.1	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	89.7	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	90.3	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.8	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	94.6	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	92.9	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	93.7	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	99.5	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	102	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	98.1	56	126



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1785050) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	94.4	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	94.0	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	95.8	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1785053)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	95.0	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	93.3	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	97.0	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	88.4	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	104	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	88.9	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	104	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	104	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	91.1	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1785053)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	37.4	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	89.0	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	76.9	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	93.6	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	109	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	122	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	29.9	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	81.4	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	90.1	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	130	32	135
EP075I: Organochlorine Pesticides (QCLot: 1785053)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	106	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	112	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	123	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	120	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	122	60	132
EP075-EM: 4,4`-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	123	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	119	59	130
EP075-EM: 4,4`-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	117	62	136
EP075-EM: 4,4`-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	119	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1785051)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	87.0	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	90.1	60	133

Matrix Spike (MS) Report

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1787811)							
EM1810779-004	NEL-EF-BH009_1.5m	EG005T: Arsenic	7440-38-2	50 mg/kg	92.7	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.8	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	96.9	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	94.8	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	98.4	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	96.2	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	84.9	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	102	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1787810)							
EM1810779-004	NEL-EF-BH009_1.5m	EG035T: Mercury	7439-97-6	5 mg/kg	102	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1787790)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1787790) - continued							
EM1810679-025	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	73.8	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1789113)							
EM1810679-025	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	93.1	77	113
EK040T: Fluoride Total (QCLot: 1787014)							
EM1810779-004	NEL-EF-BH009_1.5m	EK040T: Fluoride	16984-48-8	400 mg/kg	85.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1785192)							
EM1810779-010	NEL-BH143_1.0m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	80.0	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1785186)							
EM1810779-004	NEL-EF-BH009_1.5m	EP074-UT: Benzene	71-43-2	2 mg/kg	112	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	134	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1785186)							
EM1810779-004	NEL-EF-BH009_1.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	106	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	104	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	114	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1785187)							
EM1810779-004	NEL-EF-BH009_1.5m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	86.8	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	87.0	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	82.9	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1785187)							
EM1810779-004	NEL-EF-BH009_1.5m	EP075-EM: Phenol	108-95-2	1 mg/kg	92.1	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	71.4	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1785187)							
EM1810779-004	NEL-EF-BH009_1.5m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	97.7	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	107	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1785186)							
EM1810779-004	NEL-EF-BH009_1.5m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	98.8	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1785191)							
EM1810779-008	NEL-BH143_0.2m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	102	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	106	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	97.6	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1785186)							
EM1810779-004	NEL-EF-BH009_1.5m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	96.5	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1785191)							
EM1810779-008	NEL-BH143_0.2m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	102	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	103	67	121

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 Work Order : EM1810779 Amendment 1
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1785191) - continued							
EM1810779-008	NEL-BH143_0.2m	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	89.8	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787548)							
EM1810779-005	RB128	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	94.2	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	90.0	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.8	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.7	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	92.6	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	95.5	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1787546)							
EM1810382-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	80.1	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1785464)							
EM1810468-002	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	108	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1788156)							
EM1810779-006	FB128	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	93.2	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1787507)							
EM1810492-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	114	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1787440)							
EM1810779-006	FB128	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	101	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	91.7	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1787440)							
EM1810779-006	FB128	EP074: Chlorobenzene	108-90-7	20 µg/L	98.6	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787441)							
EM1810779-006	FB128	EP080: C6 - C9 Fraction	----	280 µg/L	65.6	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787441)							
EM1810779-006	FB128	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	62.4	44	122
EP080: BTEXN (QCLot: 1787441)							
EM1810779-006	FB128	EP080: Benzene	71-43-2	20 µg/L	97.0	68	130
		EP080: Toluene	108-88-3	20 µg/L	94.1	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1810779**

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Amendment : **1**

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **MR DAVID QUINN**

Telephone : +61-3-8549 9630

Project : **31350060910**

Date Samples Received : 05-Jul-2018

Site : **North East Link - Contamination**

Issue Date : 01-Aug-2018

Sampler : **SCOTT HILLIARD**

No. of samples received : 11

Order number :

No. of samples analysed : 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank** value outliers occur.
- **NO Duplicate** outliers occur.
- **NO Laboratory Control** outliers occur.
- **NO Matrix Spike** outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
RB128, FB128	----	----	----	10-Jul-2018	04-Jul-2018	6

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)		04-Jul-2018	10-Jul-2018	11-Jul-2018	✔	10-Jul-2018	10-Jul-2018	✔
NEL-EF-BH009_0.5m,	NEL-EF-BH009_1.5m,							
NEL-BH143_0.2m,	NEL-BH143_1.0m							
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		04-Jul-2018	----	----	----	09-Jul-2018	18-Jul-2018	✔
NEL-EF-BH009_0.5m,	NEL-EF-BH009_1.5m,							
NEL-BH143_0.2m,	NEL-BH143_1.0m							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	10-Jul-2018	31-Dec-2018	✓	10-Jul-2018	31-Dec-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	10-Jul-2018	01-Aug-2018	✓	10-Jul-2018	01-Aug-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	10-Jul-2018	01-Aug-2018	✓	10-Jul-2018	17-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	10-Jul-2018	18-Jul-2018	✓	11-Jul-2018	24-Jul-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	10-Jul-2018	01-Aug-2018	✓	11-Jul-2018	01-Aug-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	18-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	10-Jul-2018	11-Jul-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	10-Jul-2018	11-Jul-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	10-Jul-2018	11-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	18-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	18-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	18-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	18-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071-EM) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	18-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	10-Jul-2018	11-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071-EM) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	18-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-EF-BH009_0.5m, NEL-BH143_0.2m,	NEL-EF-BH009_1.5m, NEL-BH143_1.0m	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	10-Jul-2018	11-Jul-2018	✓

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) RB128,FB128	04-Jul-2018	----	----	----	10-Jul-2018	04-Jul-2018	✖	
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) RB128,FB128	04-Jul-2018	----	----	----	10-Jul-2018	31-Dec-2018	✔	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) RB128,FB128	04-Jul-2018	----	----	----	10-Jul-2018	18-Jul-2018	✔	
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB128,FB128	04-Jul-2018	----	----	----	09-Jul-2018	01-Aug-2018	✔	



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF) RB128,	FB128	04-Jul-2018	----	----	----	10-Jul-2018	18-Jul-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB128,	FB128	04-Jul-2018	----	----	----	10-Jul-2018	01-Aug-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB128,	FB128	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB128,	FB128	04-Jul-2018	11-Jul-2018	18-Jul-2018	✓	11-Jul-2018	18-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB128,	FB128	04-Jul-2018	11-Jul-2018	18-Jul-2018	✓	11-Jul-2018	18-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB128,	FB128	04-Jul-2018	11-Jul-2018	18-Jul-2018	✓	11-Jul-2018	18-Jul-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB128,	FB128	04-Jul-2018	11-Jul-2018	18-Jul-2018	✓	11-Jul-2018	18-Jul-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB128,	FB128	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB128,	FB128	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB128,	FB128	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB128,	FB128	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB128,	FB128	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB128, TB128	FB128,	04-Jul-2018	11-Jul-2018	18-Jul-2018	✓	11-Jul-2018	18-Jul-2018	✓

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 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
RB128,	FB128	04-Jul-2018	09-Jul-2018	11-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RB128,	FB128,	04-Jul-2018	11-Jul-2018	18-Jul-2018	✓	11-Jul-2018	18-Jul-2018	✓
TB128								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
RB128,	FB128,	04-Jul-2018	11-Jul-2018	18-Jul-2018	✓	11-Jul-2018	18-Jul-2018	✓
TB128								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1810780**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **SCOTT HILLIARD**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **10**
No. of samples analysed : **7**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 05-Jul-2018 10:45
Date Analysis Commenced : 09-Jul-2018
Issue Date : 13-Jul-2018 09:03



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH142_0.2m	NEL-BH142_1.0m	NEL-BH166_0.5m	NEL-BH166_1.5m	----
Client sampling date / time					03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810780-001	EM1810780-003	EM1810780-008	EM1810780-010	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		5.7	6.9	6.3	5.9	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.4	20.1	18.9	19.4	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	7	6	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		6	21	11	7	----
Lead	7439-92-1	5	mg/kg		14	13	55	20	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		6	39	14	16	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		40	46	64	23	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	0.6	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		160	470	920	240	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH142_0.2m	NEL-BH142_1.0m	NEL-BH166_0.5m	NEL-BH166_1.5m	----
Client sampling date / time					03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810780-001	EM1810780-003	EM1810780-008	EM1810780-010	-----
					Result	Result	Result	Result	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH142_0.2m	NEL-BH142_1.0m	NEL-BH166_0.5m	NEL-BH166_1.5m	----
Client sampling date / time				03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	----	
Compound	CAS Number	LOR	Unit	EM1810780-001	EM1810780-003	EM1810780-008	EM1810780-010	-----	
				Result	Result	Result	Result	----	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	----	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	----	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	----	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	----	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	----	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	----	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	----	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH142_0.2m	NEL-BH142_1.0m	NEL-BH166_0.5m	NEL-BH166_1.5m	----
Client sampling date / time					03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810780-001	EM1810780-003	EM1810780-008	EM1810780-010	-----
				Result	Result	Result	Result	Result	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg	0.09	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	0.09	<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	0.09	<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH142_0.2m	NEL-BH142_1.0m	NEL-BH166_0.5m	NEL-BH166_1.5m	----
Client sampling date / time					03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810780-001	EM1810780-003	EM1810780-008	EM1810780-010	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		67.5	68.8	63.0	68.2	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		69.7	71.0	77.6	75.7	----
Toluene-D8	2037-26-5	0.1	%		73.1	73.4	71.8	76.3	----
4-Bromofluorobenzene	460-00-4	0.1	%		76.7	83.5	77.1	85.1	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		95.1	95.1	83.3	90.1	----
2-Chlorophenol-D4	93951-73-6	0.025	%		77.6	75.2	61.5	70.5	----
2,4,6-Tribromophenol	118-79-6	0.025	%		85.1	77.4	69.3	74.2	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		95.4	93.8	83.5	87.6	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		111	106	92.1	100	----
2-Fluorobiphenyl	321-60-8	0.025	%		105	103	91.6	95.4	----
Anthracene-d10	1719-06-8	0.025	%		110	109	98.4	102	----
4-Terphenyl-d14	1718-51-0	0.025	%		133	124	116	120	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB127	FB127	TB127	----	----
Client sampling date / time				03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810780-004	EM1810780-005	EM1810780-006	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.07	6.14	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB127	FB127	TB127	----	----
Client sampling date / time					03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810780-004	EM1810780-005	EM1810780-006	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB127	FB127	TB127	----	----
Client sampling date / time				03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810780-004	EM1810780-005	EM1810780-006	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB127	FB127	TB127	----	----
Client sampling date / time					03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810780-004	EM1810780-005	EM1810780-006	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		112	112	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		107	102	----	----	----
Toluene-D8	2037-26-5	5	%		92.4	103	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		108	109	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		30.2	27.3	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		79.6	74.7	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		80.4	69.0	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		90.2	84.8	----	----	----
Anthracene-d10	1719-06-8	1.0	%		91.3	84.9	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		94.4	88.2	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB127	FB127	TB127	----	----
Client sampling date / time					03-Jul-2018 00:00	03-Jul-2018 00:00	03-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810780-004	EM1810780-005	EM1810780-006	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		33.3	31.9	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		89.1	86.2	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		90.8	87.7	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		100	94.3	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		98.8	93.1	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		108	105	----	----	----
Anthracene-d10	1719-06-8	0.25	%		111	106	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		132	127	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		101	95.9	90.9	----	----
Toluene-D8	2037-26-5	2	%		88.3	98.7	94.3	----	----
4-Bromofluorobenzene	460-00-4	2	%		91.6	102	88.0	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

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Environmental Division
Melbourne
Work Order Reference
EM1810780



Telephone : + 81-3-8549 9600

Sampled by:	S. Hillier	Date/Time:	Am 03/07/08	Relinquished by:	S. Hillier	Date/Time:	Pm 03/07/08
Received by:	Cave shed fridge	Date/Time:	03/07/08 Pm.	Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Mark Clough	Date/Time:	5/7, 10.45				
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)						

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 9 July 2018 8:22 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: ON HOLD-EM1810779-& EM1810780-GHD-NORTH EAST LINK CONTAMINATION
Attachments: 05072018174628-0001.pdf; 05072018174904-0001.pdf

Hi Shirley, hope you had a good weekend,

Please analyse the following at standard TAT:

EM1810779:

NEL-EF-BH009_0.5m = IWRG621
NEL-EF-BH009_1.5m = IWRG621

RB128 = IWRG621 water equivalent
FB128 = IWRG621 water equivalent
TB128 = Volatile TPH/BTEX

NEL-BH143_0.2m = IWRG621
NEL-BH143_1.0m = IWRG621

EM1810780:

1 NEL-BH142_0.2m = IWRG621
2 NEL-BH142_1.0m = IWRG621

4 RB127 = IWRG621 water equivalent
5 FB127 = IWRG621 water equivalent
6 TB127 = Volatile TPH/BTEX

8 NEL-BH166_0.5m = IWRG621
10 NEL-BH166_1.5m = IWRG621

I'll get working on those samples from Friday now.

Regards,

Kory Auch

GHD
T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

-----Original Message-----

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Friday, 6 July 2018 7:37 AM
To: Kory Auch <Kory.Auch@ghd.com>
Cc: David Quinn <David.Quinn@ghd.com>

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1810780

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: North East Link - Contamination		
Sampler	: SCOTT HILLIARD		

Dates

Date Samples Received	: 05-Jul-2018 10:45	Issue Date	: 09-Jul-2018
Client Requested Due Date	: 16-Jul-2018	Scheduled Reporting Date	: 16-Jul-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 1.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 10 / 7

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB127	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB127	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB127	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB127	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB127	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB127	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1810780-001	03-Jul-2018 00:00	NEL-BH142_0.2m		✓	✓
EM1810780-002	03-Jul-2018 00:00	NEL-BH142_0.5m	✓		
EM1810780-003	03-Jul-2018 00:00	NEL-BH142_1.0m		✓	✓
EM1810780-007	03-Jul-2018 00:00	NEL-BH166_0.2m	✓		
EM1810780-008	03-Jul-2018 00:00	NEL-BH166_0.5m		✓	✓
EM1810780-009	03-Jul-2018 00:00	NEL-BH166_1.0m	✓		
EM1810780-010	03-Jul-2018 00:00	NEL-BH166_1.5m		✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1810780-004	03-Jul-2018 00:00	RB127	✓	
EM1810780-005	03-Jul-2018 00:00	FB127	✓	
EM1810780-006	03-Jul-2018 00:00	TB127		✓

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1810780	Page	: 1 of 17
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 05-Jul-2018
Order number	: ----	Date Analysis Commenced	: 09-Jul-2018
C-O-C number	: ----	Issue Date	: 13-Jul-2018
Sampler	: SCOTT HILLIARD		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 10		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1785155)									
EM1810779-002	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.8	7.7	1.29	0% - 20%
EM1810896-002	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.4	8.4	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1786856)									
EM1810779-002	Anonymous	EA055: Moisture Content	----	0.1	%	16.2	16.2	0.00	0% - 50%
EM1810855-003	Anonymous	EA055: Moisture Content	----	0.1	%	19.8	21.3	7.36	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1787811)									
EM1810779-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	51	53	2.68	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	21	12.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	17	20	19.5	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	44	55	22.0	0% - 50%
EM1810896-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	28	29	3.65	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	8	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1787811) - continued									
EM1810896-002	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	8	9	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1787810)									
EM1810779-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810896-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1787790)									
EM1810679-014	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810780-008	NEL-BH166_0.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1789113)									
EM1810780-008	NEL-BH166_0.5m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1810679-014	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1784807)									
EM1810780-001	NEL-BH142_0.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	160	140	14.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1785192)									
EM1810779-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1784791)									
EM1810780-001	NEL-BH142_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1784791)									
EM1810780-001	NEL-BH142_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1784791)									
EM1810780-001	NEL-BH142_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1784791) - continued									
EM1810780-001	NEL-BH142_0.2m	EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1785187)									
EM1810779-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1785187)									
EM1810779-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1785187)									
EM1810779-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1785187) - continued									
EM1810779-002	Anonymous	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1785187)									
EM1810779-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1784791)									
EM1810780-001	NEL-BH142_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1785191)									
EM1810779-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1784791)									
EM1810780-001	NEL-BH142_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1785191)									
EM1810779-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

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 Work Order : EM1810780
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1785191) - continued									
EM1810779-002	Anonymous	EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1787508)									
EM1810779-006	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.34	6.23	1.75	0% - 20%
EM1810874-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.12	7.14	0.280	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1787547)									
EM1810779-005	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1787548)									
EM1810903-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.023	0.022	5.88	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.024	0.024	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1810779-005	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1787546)									
EM1810382-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1810871-009	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1785464)									
EM1810468-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1810581-006	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1788156)									
EM1810779-005	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1810912-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.024	0.024	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1787507)									
EM1810882-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	2.2	2.3	0.00	0% - 20%
EM1810779-006	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1810882-003	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit

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 Work Order : EM1810780
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074G: Trihalomethanes (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1787441)									
EM1810779-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1810882-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1787441)									
EM1810779-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1810882-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1787441)									
EM1810779-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1810882-003	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1787811)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.8	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	91.9	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	98.3	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	88.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	88.1	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	98.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.0	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.6	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	97.1	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	96.3	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1787810)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	95.8	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1787790)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	90.6	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1789113)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	94.8	80	110
EK040T: Fluoride Total (QCLot: 1784807)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	96.0	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1785192)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	76.9	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1784791)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	91.8	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	92.4	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	93.6	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	93.4	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	95.4	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	92.9	74	114
EP074H: Naphthalene (QCLot: 1784791)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	95.4	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1784791)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	76.9	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	87.0	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1784791) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	91.1	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	88.6	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	92.5	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	91.9	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	89.4	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	91.2	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	91.6	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	93.9	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	98.3	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	90.9	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	92.0	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	95.0	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	84.3	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.9	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	96.4	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	97.9	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	87.1	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1785187)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	97.3	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	107	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	103	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	117	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	101	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	115	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	104	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	100	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	109	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1785187)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	115	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	96.3	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	102	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	108	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	115	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	105	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	103	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	105	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	114	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	105	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1785187)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	107	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	109	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	108	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	106	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	107	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	125	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	108	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	114	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	110	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	107	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	108	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	107	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	107	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	102	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	100	55	137
EP075I: Organochlorine Pesticides (QCLot: 1785187)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	106	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	106	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	107	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	108	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	110	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	107	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	107	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	108	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	109	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	108	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	110	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	109	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	101	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	83.4	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	115	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	107	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	107	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	110	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	109	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	106	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1784791)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	91.4	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787547)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	93.2	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787548)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	103	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	93.0	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.7	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	98.3	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	96.2	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1787546)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.4	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1785464)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	104	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1788156)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	91.7	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1787507)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1784713)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	84.4	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1787440)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1787440) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	105	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1787440)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	104	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	95.8	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	103	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	97.8	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	99.7	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	91.4	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	87.0	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	99.9	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	103	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	104	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	105	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	94.4	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	107	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	103	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1787440)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	106	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	101	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	103	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	98.2	62	119
EP074G: Trihalomethanes (QCLot: 1787440)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	99.6	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1784714)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	84.0	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	87.9	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	86.3	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	89.3	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	91.9	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	92.1	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.2	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	93.7	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	92.4	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	92.9	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	100	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	100	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	97.8	56	126



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1784714) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	93.2	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	93.1	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	95.0	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1784726)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	84.1	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	81.0	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	85.6	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	78.1	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	94.8	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	82.8	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	96.2	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	95.8	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	81.3	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1784726)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	32.8	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	77.9	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	68.7	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	84.2	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	95.9	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	122	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	28.4	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	77.3	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	80.2	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	# 136	32	135
EP075I: Organochlorine Pesticides (QCLot: 1784726)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	97.3	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	97.3	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	104	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	125	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	127	60	132
EP075-EM: 4,4`-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	112	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	124	59	130
EP075-EM: 4,4`-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	122	62	136
EP075-EM: 4,4`-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	125	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1784715)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	87.3	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	89.0	60	133



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1787790) - continued							
EM1810679-025	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	73.8	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1789113)							
EM1810679-025	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	93.1	77	113
EK040T: Fluoride Total (QCLot: 1784807)							
EM1810780-003	NEL-BH142_1.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	73.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1785192)							
EM1810779-010	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	80.0	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1784791)							
EM1810780-003	NEL-BH142_1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	92.0	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	97.1	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1784791)							
EM1810780-003	NEL-BH142_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	105	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	87.5	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	93.7	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1785187)							
EM1810779-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	86.8	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	87.0	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	82.9	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1785187)							
EM1810779-004	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	92.1	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	71.4	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1785187)							
EM1810779-004	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	97.7	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	107	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1784791)							
EM1810780-003	NEL-BH142_1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	79.0	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1785191)							
EM1810779-008	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	102	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	106	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	97.6	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1784791)							
EM1810780-003	NEL-BH142_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	79.6	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1785191)							
EM1810779-008	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	102	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	103	67	121

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 Work Order : EM1810780
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1785191) - continued							
EM1810779-008	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	89.8	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787548)							
EM1810779-005	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	94.2	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	90.0	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.8	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.7	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	92.6	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	95.5	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1787546)							
EM1810382-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	80.1	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1785464)							
EM1810468-002	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	108	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1788156)							
EM1810779-006	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	93.2	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1787507)							
EM1810492-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	114	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1787440)							
EM1810779-006	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	101	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	91.7	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1787440)							
EM1810779-006	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	98.6	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787441)							
EM1810779-006	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	65.6	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787441)							
EM1810779-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	62.4	44	122
EP080: BTEXN (QCLot: 1787441)							
EM1810779-006	Anonymous	EP080: Benzene	71-43-2	20 µg/L	97.0	68	130
		EP080: Toluene	108-88-3	20 µg/L	94.1	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1810780	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 05-Jul-2018
Site	: North East Link - Contamination	Issue Date	: 13-Jul-2018
Sampler	: SCOTT HILLIARD	No. of samples received	: 10
Order number	:	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Matrix Spike outliers occur.
- Laboratory Control outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075A: Phenolic Compounds (Non-halogenated)	QC-1784726-001	----	2-Cyclohexyl-4.6-Dinitro phenol	131-89-5	136 %	32-135%	Recovery greater than upper control limit

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
RB127,	FB127	----	----	----	10-Jul-2018	03-Jul-2018	7

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH142_0.2m, NEL-BH166_0.5m,	NEL-BH142_1.0m, NEL-BH166_1.5m	03-Jul-2018	10-Jul-2018	10-Jul-2018	✓	10-Jul-2018	10-Jul-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH142_0.2m, NEL-BH166_0.5m,	NEL-BH142_1.0m, NEL-BH166_1.5m	03-Jul-2018	----	----	----	09-Jul-2018	17-Jul-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH142_0.2m, NEL-BH166_0.5m,	NEL-BH142_1.0m, NEL-BH166_1.5m	03-Jul-2018	10-Jul-2018	30-Dec-2018	✓	10-Jul-2018	30-Dec-2018	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH142_0.2m, NEL-BH166_0.5m,	NEL-BH142_1.0m, NEL-BH166_1.5m	03-Jul-2018	10-Jul-2018	31-Jul-2018	✓	10-Jul-2018	31-Jul-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH142_0.2m, NEL-BH166_0.5m,	NEL-BH142_1.0m, NEL-BH166_1.5m	03-Jul-2018	10-Jul-2018	31-Jul-2018	✓	10-Jul-2018	17-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH142_0.2m, NEL-BH166_0.5m,	NEL-BH142_1.0m, NEL-BH166_1.5m	03-Jul-2018	10-Jul-2018	17-Jul-2018	✓	11-Jul-2018	24-Jul-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH142_0.2m, NEL-BH166_0.5m,	NEL-BH142_1.0m, NEL-BH166_1.5m	03-Jul-2018	09-Jul-2018	31-Jul-2018	✓	10-Jul-2018	31-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH142_0.2m, NEL-BH166_0.5m,	NEL-BH142_1.0m, NEL-BH166_1.5m	03-Jul-2018	09-Jul-2018	17-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH142_0.2m, NEL-BH166_0.5m,	NEL-BH142_1.0m, NEL-BH166_1.5m	03-Jul-2018	09-Jul-2018	10-Jul-2018	✓	09-Jul-2018	10-Jul-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH142_0.2m, NEL-BH166_0.5m,	NEL-BH142_1.0m, NEL-BH166_1.5m	03-Jul-2018	09-Jul-2018	10-Jul-2018	✓	09-Jul-2018	10-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH142_0.2m,	NEL-BH142_1.0m,	03-Jul-2018	09-Jul-2018	10-Jul-2018	✔	09-Jul-2018	10-Jul-2018	✔
NEL-BH166_0.5m,	NEL-BH166_1.5m							
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH142_0.2m,	NEL-BH142_1.0m,	03-Jul-2018	09-Jul-2018	17-Jul-2018	✔	09-Jul-2018	18-Aug-2018	✔
NEL-BH166_0.5m,	NEL-BH166_1.5m							
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH142_0.2m,	NEL-BH142_1.0m,	03-Jul-2018	09-Jul-2018	17-Jul-2018	✔	09-Jul-2018	18-Aug-2018	✔
NEL-BH166_0.5m,	NEL-BH166_1.5m							
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH142_0.2m,	NEL-BH142_1.0m,	03-Jul-2018	09-Jul-2018	17-Jul-2018	✔	09-Jul-2018	18-Aug-2018	✔
NEL-BH166_0.5m,	NEL-BH166_1.5m							
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH142_0.2m,	NEL-BH142_1.0m,	03-Jul-2018	09-Jul-2018	17-Jul-2018	✔	09-Jul-2018	18-Aug-2018	✔
NEL-BH166_0.5m,	NEL-BH166_1.5m							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH142_0.2m,	NEL-BH142_1.0m,	03-Jul-2018	09-Jul-2018	10-Jul-2018	✔	09-Jul-2018	10-Jul-2018	✔
NEL-BH166_0.5m,	NEL-BH166_1.5m							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH142_0.2m,	NEL-BH142_1.0m,	03-Jul-2018	09-Jul-2018	10-Jul-2018	✔	09-Jul-2018	10-Jul-2018	✔
NEL-BH166_0.5m,	NEL-BH166_1.5m							

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	RB127, FB127	03-Jul-2018	----	----	----	10-Jul-2018	03-Jul-2018	✘
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)	RB127, FB127	03-Jul-2018	----	----	----	10-Jul-2018	30-Dec-2018	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)	RB127, FB127	03-Jul-2018	----	----	----	10-Jul-2018	17-Jul-2018	✔



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	FB127	03-Jul-2018	----	----	----	09-Jul-2018	31-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF)	FB127	03-Jul-2018	----	----	----	10-Jul-2018	17-Jul-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	FB127	03-Jul-2018	----	----	----	10-Jul-2018	31-Jul-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)	FB127	03-Jul-2018	09-Jul-2018	10-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)	FB127	03-Jul-2018	11-Jul-2018	17-Jul-2018	✓	11-Jul-2018	17-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB127	03-Jul-2018	11-Jul-2018	17-Jul-2018	✓	11-Jul-2018	17-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB127	03-Jul-2018	11-Jul-2018	17-Jul-2018	✓	11-Jul-2018	17-Jul-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)	FB127	03-Jul-2018	11-Jul-2018	17-Jul-2018	✓	11-Jul-2018	17-Jul-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))	FB127	03-Jul-2018	09-Jul-2018	10-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)	FB127	03-Jul-2018	09-Jul-2018	10-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)	FB127	03-Jul-2018	09-Jul-2018	10-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM)	FB127	03-Jul-2018	09-Jul-2018	10-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)	FB127	03-Jul-2018	09-Jul-2018	10-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)	FB127, TB127	03-Jul-2018	11-Jul-2018	17-Jul-2018	✓	11-Jul-2018	17-Jul-2018	✓

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 Work Order : EM1810780
 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
RB127,	FB127	03-Jul-2018	09-Jul-2018	10-Jul-2018	✓	09-Jul-2018	18-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RB127,	FB127,	03-Jul-2018	11-Jul-2018	17-Jul-2018	✓	11-Jul-2018	17-Jul-2018	✓
TB127								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
RB127,	FB127,	03-Jul-2018	11-Jul-2018	17-Jul-2018	✓	11-Jul-2018	17-Jul-2018	✓
TB127								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1810871**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **AT, EH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **10**
No. of samples analysed : **7**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 06-Jul-2018 17:30
Date Analysis Commenced : 09-Jul-2018
Issue Date : 16-Jul-2018 13:28



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EA005-P: pH by PC Titrator result for EM1810871 #8 has been confirmed by re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH167_0.2m	NEL-BH167_0.5m	NEL-BH225_0.2m	NEL-BH225_1.0m	----
Client sampling date / time					06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810871-001	EM1810871-002	EM1810871-004	EM1810871-006	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.2	6.1	7.4	6.2	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.4	14.6	19.5	17.6	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	5	23	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		10	13	29	8	----
Lead	7439-92-1	5	mg/kg		14	12	18	12	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		15	23	79	9	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		18	20	54	13	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		220	220	240	240	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH167_0.2m	NEL-BH167_0.5m	NEL-BH225_0.2m	NEL-BH225_1.0m	----
Client sampling date / time					06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810871-001	EM1810871-002	EM1810871-004	EM1810871-006	-----
					Result	Result	Result	Result	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH167_0.2m	NEL-BH167_0.5m	NEL-BH225_0.2m	NEL-BH225_1.0m	----
Client sampling date / time					06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810871-001	EM1810871-002	EM1810871-004	EM1810871-006	-----
					Result	Result	Result	Result	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH167_0.2m	NEL-BH167_0.5m	NEL-BH225_0.2m	NEL-BH225_1.0m	----
Client sampling date / time				06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit	EM1810871-001	EM1810871-002	EM1810871-004	EM1810871-006	-----
				Result	Result	Result	Result	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH167_0.2m	NEL-BH167_0.5m	NEL-BH225_0.2m	NEL-BH225_1.0m	----
Client sampling date / time					06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----
Compound	CAS Number	LOR	Unit		EM1810871-001	EM1810871-002	EM1810871-004	EM1810871-006	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		77.8	86.8	72.2	68.6	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		78.2	74.6	72.2	76.2	----
Toluene-D8	2037-26-5	0.1	%		99.8	87.9	84.1	82.2	----
4-Bromofluorobenzene	460-00-4	0.1	%		103	100	90.5	92.9	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		88.0	78.9	91.8	86.4	----
2-Chlorophenol-D4	93951-73-6	0.025	%		78.0	79.3	80.7	75.9	----
2,4,6-Tribromophenol	118-79-6	0.025	%		92.6	66.1	93.1	87.3	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		95.2	88.9	98.1	90.2	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		95.5	88.2	98.5	90.3	----
2-Fluorobiphenyl	321-60-8	0.025	%		86.6	93.2	89.5	83.6	----
Anthracene-d10	1719-06-8	0.025	%		103	104	104	99.2	----
4-Terphenyl-d14	1718-51-0	0.025	%		112	125	115	110	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB130	FB130	TB130	----	----
Client sampling date / time				06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810871-008	EM1810871-009	EM1810871-010	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	10.8	6.98	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB130	FB130	TB130	----	----
Client sampling date / time					06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810871-008	EM1810871-009	EM1810871-010	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2,4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB130	FB130	TB130	----	----
Client sampling date / time					06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810871-008	EM1810871-009	EM1810871-010	-----	-----
					Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,6-Dichlorophenol	87-65-0	2	µg/L		<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L		<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L		<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L		<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L		<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L		<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L		<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	4	µg/L		<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L		<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L		<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L		<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L		<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L		<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L		<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L		<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L		<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L		<50	<50	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L		<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB130	FB130	TB130	----	----
Client sampling date / time					06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810871-008	EM1810871-009	EM1810871-010	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		78.3	81.0	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		103	100	----	----	----
Toluene-D8	2037-26-5	5	%		99.4	98.5	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		109	107	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		23.4	16.5	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		55.3	33.6	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		53.2	48.0	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		69.8	54.8	----	----	----
Anthracene-d10	1719-06-8	1.0	%		70.6	61.2	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		70.6	72.8	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB130	FB130	TB130	----	----
Client sampling date / time					06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810871-008	EM1810871-009	EM1810871-010	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		26.5	28.6	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		76.2	81.2	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		81.3	92.1	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		79.4	88.7	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		84.5	91.8	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		96.3	102	----	----	----
Anthracene-d10	1719-06-8	0.25	%		97.8	109	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		112	98.2	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		97.5	94.3	92.3	----	----
Toluene-D8	2037-26-5	2	%		95.2	94.1	98.3	----	----
4-Bromofluorobenzene	460-00-4	2	%		102	90.6	91.5	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		<i>Recovery Limits (%)</i>	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Page 1 of 1

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale										PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format									
Project North East Link - Contamination		Contact Email David.Quinn@ghd.com		Address: 2 - 4 Westall Rd, Springvale																			
GHD Contact David Quinn		Quote No./GHD Reference ME/124/18		Lab Contact: Shirley LeCornu																			
Standard TAT																							
Sample ID	Date	Time	Compos	Sample	Preservative	Type	Number	Volume (mL)	HOLD	Analyses Required													
1 NEL-BH167-0-2m	6/7/18	Am	/	S	/	D	1	250	X														
2 " " -0.5m	"	"	/	S	/	J	1	"	X														
3 " " -1.0m	"	"	/	S	/	J	1	"	X														
4 NEL-BH225-0-2m	"	"	/	S	/	J	1	"	X														
5 " " -0.5m	"	"	/	S	/	J	1	"	X														
6 " " -1.0m	"	"	/	S	/	J	1	"	X														
7 " " -1.5m	"	"	/	S	/	S	1	"	X														
8 RB130 PS130	"	"	/	W	/	UGP	8	/	X														
9 FB130	9/7	"	/	W	/	UGP	8	/	X														
10 TB130	"	"	/	W	/	V	1	/	X														

Environmental Division
Melbourne
Work Order Reference
EM1810871



Telephone: +61-3-8649 9600

Sampled by:	K. Holden / A. Tan	Date/Time:	Am 06/07/18	Relinquished by:	K. Holden /	Date/Time:	PM 06/07/18
Received by:		Date/Time:		Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:	06/07/18 PM.	Relinquished by:		Date/Time:	
Received by Lab:	Rm (Am)	Date/Time:	6/7/18 E 5:30 PM				
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)						

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 9 July 2018 1:52 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: ON HOLD-EM1810871 & EM1810873-GHD-NORTH EAST LINK CONTAMINATION

Hi Shirley,

Please analyse the following at standard TAT:

EM1810871:

- ① NEL-BH167_0.2m = IWRG621
- ② NEL-BH167_0.5m = IWRG621
- ④ NEL-BH225_0.2m = IWRG621
- ⑥ NEL-BH225_1.0m = IWRG621
- ⑧ RB130 = IWRG621 water equivalent
- ⑨ FB130 = IWRG621 water equivalent
- ⑩ TB130 = Volatile TPH/BTEX

EM1810873:

NEL-BH120_0.2m = IWRG621
NEL-BH120_1.0m = IWRG621

NEL-BH174_0.5m = IWRG621
NEL-BH174_1.5m = IWRG621

NEL-BH178_0.2m = IWRG621
NEL-BH178_1.0m = IWRG621

FB129 = IWRG621 water equivalent
RB129 = IWRG621 water equivalent
TB129 = Volatile TPH/BTEX

Regards,

Kory Auch

GHD
T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

-----Original Message-----

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Monday, 9 July 2018 7:54 AM

QUALITY CONTROL REPORT

Work Order	: EM1810871	Page	: 1 of 26
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 06-Jul-2018
Order number	: ----	Date Analysis Commenced	: 09-Jul-2018
C-O-C number	: ----	Issue Date	: 16-Jul-2018
Sampler	: AT, EH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 10		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1787938)									
EM1810784-011	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.3	8.2	1.21	0% - 20%
EM1810873-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.7	6.7	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1788112)									
EM1810784-011	Anonymous	EA055: Moisture Content	----	0.1	%	19.2	19.2	0.00	0% - 50%
EM1810851-006	Anonymous	EA055: Moisture Content	----	0.1	%	6.4	6.2	3.08	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1788113)									
EM1810871-006	NEL-BH225_1.0m	EA055: Moisture Content	----	0.1	%	17.6	17.5	0.00	0% - 50%
EM1810904-001	Anonymous	EA055: Moisture Content	----	0.1	%	9.7	11.0	13.0	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1788815)									
EM1810851-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	92	82	10.8	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	9	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	39	33	16.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	33	35	5.45	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	109	111	2.23	0% - 20%
EM1810851-010	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	78	79	1.56	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1788815) - continued									
EM1810851-010	Anonymous	EG005T: Copper	7440-50-8	5	mg/kg	30	27	13.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	8	49.6	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	80	60	27.8	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1788816)									
EM1810851-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.00	No Limit
EM1810851-010	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1788471)									
EM1810851-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810851-010	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1791966)									
EM1810871-001	NEL-BH167_0.2m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1810873-011	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1787014)									
EM1810779-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	340	330	0.00	No Limit
EM1810873-003	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	630	570	10.0	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1787809)									
EM1810871-001	NEL-BH167_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810911-005	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.2	<0.2	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1787840)									
EM1810871-002	NEL-BH167_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810888-046	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1787026)									
EM1810871-001	NEL-BH167_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810911-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1787026)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074H: Naphthalene (QC Lot: 1787026) - continued									
EM1810871-001	NEL-BH167_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1810911-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1787026)									
EM1810871-001	NEL-BH167_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1810911-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1787026) - continued									
EM1810911-001	Anonymous	EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1787807)									
EM1810871-001	NEL-BH167_0.2m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		0-2							
EM1810911-005	Anonymous	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.13	<0.13	0.00	No Limit
EM1810871-002	NEL-BH167_0.5m	0-2							
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1810888-046	Anonymous	EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		0-2							
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1810888-046	Anonymous	EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1787841) - continued									
EM1810888-046	Anonymous	EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1787807)									
EM1810871-001	NEL-BH167_0.2m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1810911-005	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1787841)	NEL-BH167_0.5m	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
EM1810888-046	Anonymous	EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1787841) - continued									
EM1810888-046	Anonymous	EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1787807)									
EM1810871-001	NEL-BH167_0.2m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810911-005	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1787841)									
EM1810871-002	NEL-BH167_0.5m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1787841) - continued									
EM1810871-002	NEL-BH167_0.5m	EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EM1810888-046	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5
EP075-EM: Acenaphthene	83-32-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Acenaphthylene	208-96-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Fluorene	86-73-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Phenanthrene	85-01-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Anthracene	120-12-7			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Fluoranthene	206-44-0			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Pyrene	129-00-0			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benz(a)anthracene	56-55-3			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Chrysene	218-01-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(a)pyrene	50-32-8			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(g.h.i)perylene	191-24-2			0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1787807)									
EM1810871-001	NEL-BH167_0.2m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP075I: Organochlorine Pesticides (QC Lot: 1787807) - continued											
EM1810871-001	NEL-BH167_0.2m	EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EM1810911-005	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.07	<0.06	0.00	No Limit		
		EP075I: Organochlorine Pesticides (QC Lot: 1787841)									
		EM1810871-002	NEL-BH167_0.5m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
EP075-EM: Hexachlorobenzene (HCB)	118-74-1			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: beta-BHC	319-85-7			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: gamma-BHC	58-89-9			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: delta-BHC	319-86-8			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Heptachlor	76-44-8			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EP075-EM: Aldrin	309-00-2			0.03	mg/kg	<0.03	<0.03	0.00	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1787841) - continued									
EM1810871-002	NEL-BH167_0.5m	EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1810888-046	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1787026)									
EM1810871-001	NEL-BH167_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1810911-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1787808)									
EM1810911-005	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

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 Work Order : EM1810871
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1787808) - continued									
EM1810871-001	NEL-BH167_0.2m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1787842)									
EM1810871-002	NEL-BH167_0.5m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1810888-046	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1787026)									
EM1810871-001	NEL-BH167_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1810911-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1787808)									
EM1810911-005	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1810871-001	NEL-BH167_0.2m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1787842)									
EM1810871-002	NEL-BH167_0.5m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1810888-046	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1787508)									
EM1810779-006	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.34	6.23	1.75	0% - 20%
EM1810874-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.12	7.14	0.280	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1787547)									
EM1810779-005	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1787548)									
EM1810903-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1787548) - continued									
EM1810903-003	Anonymous	EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.023	0.022	5.88	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.024	0.024	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1810779-005	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1787546)									
EM1810382-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1810871-009	FB130	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1788463)									
EM1810871-008	RB130	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1788156)									
EM1810779-005	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1810912-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.024	0.024	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1787507)									
EM1810882-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	2.2	2.3	0.00	0% - 20%
EM1810779-006	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1787440) - continued									
EM1810779-005	Anonymous	EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1810882-003	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1787441)									
EM1810779-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1810882-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1787441)									
EM1810779-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1810882-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1787441)									

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 Work Order : EM1810871
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1787441) - continued									
EM1810779-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1810882-003	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
		LCS	Low	High
Result				
<5	21.7 mg/kg	91.8	79	113
<1	4.64 mg/kg	88.0	85	109
<5	32 mg/kg	94.0	78	108
<5	40 mg/kg	90.6	78	106
<2	7.9 mg/kg	102	86	112
<2	55 mg/kg	96.1	82	111
<5	5.37 mg/kg	103	93	109
<2	2.1 mg/kg	80.0	80	108
<5	5.2 mg/kg	92.5	88	116
<5	60.8 mg/kg	96.6	82	111
<0.1	2.57 mg/kg	90.1	77	104
<0.5	40 mg/kg	92.3	75	112
<1	20 mg/kg	98.4	80	110
<40	400 mg/kg	86.8	75	110
<0.1	1 mg/kg	88.3	63	118
<0.1	1 mg/kg	101	63	118
<0.2	2.1 mg/kg	81.3	74	118
<0.5	2.1 mg/kg	101	70	124
<0.5	2.1 mg/kg	98.5	71	122
<0.5	4.2 mg/kg	102	70	118
<0.5	2.1 mg/kg	111	76	116
<0.5	2.1 mg/kg	104	74	114
<1	0.6 mg/kg	92.4	77	111



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1787026) - continued								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	75.4	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	76.6	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	92.2	68	107
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	77.0	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	90.3	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	86.8	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	81.9	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	71.2	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	91.0	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	83.4	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	104	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	92.1	64	124
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	82.8	70	119
EP074-UT: 1.1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	112	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	70.1	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	83.0	73	117
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	78.9	69	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	80.6	75	114
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	72.8	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1787807)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	85.5	54	122
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	114	58	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	89.9	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	101	62	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	108	53	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	117	60	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	85.7	56	118
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	80.6	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	95.2	52	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1787841)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	110	54	122
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	114	58	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	105	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	116	62	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	88.3	53	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	114	60	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	95.8	56	118



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1787841) - continued								
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	98.0	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	93.7	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1787807)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	94.5	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	91.3	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	98.2	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	112	53	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	117	43	120
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	108	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	70.1	59	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	72.3	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	77.9	51	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	96.5	12	132
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1787841)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	111	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	98.1	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	102	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	108	53	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	110	43	120
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	104	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	95.0	59	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	89.9	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	101	51	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	85.2	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1787807)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	90.4	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	87.5	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	98.6	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	89.6	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	89.4	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	113	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	88.4	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	88.4	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	93.3	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	91.2	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	90.0	64	134



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1787807) - continued								
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	90.6	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	82.8	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	83.3	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	81.3	55	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1787841)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	104	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	107	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	106	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	102	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	104	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	122	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	106	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	122	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	102	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	105	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	106	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	106	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	113	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	105	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	109	55	137
EP075I: Organochlorine Pesticides (QCLot: 1787807)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	88.0	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	89.2	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	89.4	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	87.2	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	93.5	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	90.6	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	88.7	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	89.5	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	89.2	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	88.8	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	75.7	63	136
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	93.0	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	83.6	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	64.9	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	93.8	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	88.2	66	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	88.7	66	134



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075I: Organochlorine Pesticides (QCLot: 1787807) - continued								
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	88.4	63	139
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	89.5	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	88.6	61	136
EP075I: Organochlorine Pesticides (QCLot: 1787841)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	103	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	102	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	106	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	104	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	106	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	104	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	106	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	107	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	107	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	106	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	111	63	136
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	106	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	99.2	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	106	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	118	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	106	66	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	101	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	106	63	139
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	119	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	112	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787026)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	97.8	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787808)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	98.5	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	103	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	93.2	77	116
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787842)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	93.6	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	99.7	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	96.0	77	116
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787026)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	93.9	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE	10	mg/kg	<10	----	----	----	----
	X							



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787808)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	98.2	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	99.4	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	94.1	68	124
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787842)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	95.6	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	98.8	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	93.9	68	124
Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787547)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	93.2	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787548)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	103	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	93.0	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.7	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	98.3	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	96.2	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1787546)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.4	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1788463)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	106	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1788156)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	91.7	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1787507)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1785776)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	66.2	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1787440)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	105	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1787440)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	104	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	95.8	65	124

Method Blank (MB) Report

Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
	LCS	Low	High

[illegible]

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report

Spike

<i>SpikeRecovery</i> (%)
100
90
80
70
60
50
40
30
20
10
0

Recovery Limits (%)

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1788815)							
EM1810851-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	86.3	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	86.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	111	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	104	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	83.8	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	93.6	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	80.4	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	118	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1788816)							
EM1810851-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	103	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1788471)							
EM1810851-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	78.9	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1791966)							
EM1810871-002	NEL-BH167_0.5m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	94.1	77	113
EK040T: Fluoride Total (QCLot: 1787014)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK040T: Fluoride Total (QCLot: 1787014) - continued							
EM1810779-004	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	85.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1787809)							
EM1810871-006	NEL-BH225_1.0m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	99.2	36	152
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1787840)							
EM1810888-011	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	92.8	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1787026)							
EM1810871-002	NEL-BH167_0.5m	EP074-UT: Benzene	71-43-2	2 mg/kg	75.3	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	71.6	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1787026)							
EM1810871-002	NEL-BH167_0.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	72.0	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	67.5	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	72.0	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1787807)							
EM1810871-006	NEL-BH225_1.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	82.6	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	69.9	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	78.1	10	144
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1787841)							
EM1810888-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	105	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	82.1	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	49.5	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1787807)							
EM1810871-006	NEL-BH225_1.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	76.2	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	80.8	13	129
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1787841)							
EM1810888-001	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	80.6	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	73.7	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1787807)							
EM1810871-006	NEL-BH225_1.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	67.4	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	90.6	27	169
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1787841)							
EM1810888-001	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	104	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	# Not Determined	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787026)							
EM1810871-002	NEL-BH167_0.5m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	65.8	43	111



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787808)							
EM1810873-001	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	100	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	103	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	92.9	64	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787842)							
EM1810888-006	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	94.3	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	100	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	97.2	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787026)							
EM1810871-002	NEL-BH167_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	62.1	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787808)							
EM1810873-001	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	99.0	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	99.0	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	93.9	44	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787842)							
EM1810888-006	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	96.3	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	99.7	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	97.5	44	126

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787548)							
EM1810779-005	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	94.2	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	90.0	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.8	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.7	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	92.6	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	95.5	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1787546)							
EM1810382-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	80.1	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1788463)							
EM1810871-009	FB130	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	102	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1788156)							
EM1810779-006	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	93.2	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1787507)							
EM1810492-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	114	70	130

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 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 1787440)							
EM1810779-006	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	101	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	91.7	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1787440)							
EM1810779-006	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	98.6	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787441)							
EM1810779-006	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	65.6	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787441)							
EM1810779-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	62.4	44	122
EP080: BTEXN (QCLot: 1787441)							
EM1810779-006	Anonymous	EP080: Benzene	71-43-2	20 µg/L	97.0	68	130
		EP080: Toluene	108-88-3	20 µg/L	94.1	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1810871	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 06-Jul-2018
Site	: ----	Issue Date	: 16-Jul-2018
Sampler	: AT, EH	No. of samples received	: 10
Order number	:	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
RB130, FB130	----	----	----	10-Jul-2018	06-Jul-2018	4

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)		06-Jul-2018	10-Jul-2018	13-Jul-2018	✔	10-Jul-2018	10-Jul-2018	✔
NEL-BH167_0.2m,	NEL-BH167_0.5m,							
NEL-BH225_0.2m,	NEL-BH225_1.0m							
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		06-Jul-2018	----	----	----	10-Jul-2018	20-Jul-2018	✔
NEL-BH167_0.2m,	NEL-BH167_0.5m,							
NEL-BH225_0.2m,	NEL-BH225_1.0m							



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	10-Jul-2018	02-Jan-2019	✓	11-Jul-2018	02-Jan-2019	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	10-Jul-2018	03-Aug-2018	✓	11-Jul-2018	03-Aug-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	11-Jul-2018	03-Aug-2018	✓	11-Jul-2018	18-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	11-Jul-2018	20-Jul-2018	✓	12-Jul-2018	25-Jul-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	10-Jul-2018	03-Aug-2018	✓	11-Jul-2018	03-Aug-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	10-Jul-2018	20-Jul-2018	✓	10-Jul-2018	19-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	09-Jul-2018	13-Jul-2018	✓	11-Jul-2018	13-Jul-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	09-Jul-2018	13-Jul-2018	✓	11-Jul-2018	13-Jul-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	09-Jul-2018	13-Jul-2018	✓	11-Jul-2018	13-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	10-Jul-2018	20-Jul-2018	✓	10-Jul-2018	19-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	10-Jul-2018	20-Jul-2018	✔	10-Jul-2018	19-Aug-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	10-Jul-2018	20-Jul-2018	✔	10-Jul-2018	19-Aug-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	10-Jul-2018	20-Jul-2018	✔	10-Jul-2018	19-Aug-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	09-Jul-2018	13-Jul-2018	✔	11-Jul-2018	13-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	10-Jul-2018	20-Jul-2018	✔	10-Jul-2018	19-Aug-2018	✔
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	09-Jul-2018	13-Jul-2018	✔	11-Jul-2018	13-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH167_0.2m, NEL-BH225_0.2m,	NEL-BH167_0.5m, NEL-BH225_1.0m	06-Jul-2018	10-Jul-2018	20-Jul-2018	✔	10-Jul-2018	19-Aug-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) RB130,FB130	06-Jul-2018	----	----	----	10-Jul-2018	06-Jul-2018	✘	
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) RB130,FB130	06-Jul-2018	----	----	----	10-Jul-2018	02-Jan-2019	✔	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) RB130,FB130	06-Jul-2018	----	----	----	10-Jul-2018	20-Jul-2018	✔	
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB130,FB130	06-Jul-2018	----	----	----	10-Jul-2018	03-Aug-2018	✔	



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) RB130,	FB130	06-Jul-2018	----	----	----	10-Jul-2018	20-Jul-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB130,	FB130	06-Jul-2018	----	----	----	10-Jul-2018	03-Aug-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB130,	FB130	06-Jul-2018	09-Jul-2018	13-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB130,	FB130	06-Jul-2018	11-Jul-2018	20-Jul-2018	✓	11-Jul-2018	20-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB130,	FB130	06-Jul-2018	11-Jul-2018	20-Jul-2018	✓	11-Jul-2018	20-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB130,	FB130	06-Jul-2018	11-Jul-2018	20-Jul-2018	✓	11-Jul-2018	20-Jul-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB130,	FB130	06-Jul-2018	11-Jul-2018	20-Jul-2018	✓	11-Jul-2018	20-Jul-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB130,	FB130	06-Jul-2018	09-Jul-2018	13-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB130,	FB130	06-Jul-2018	09-Jul-2018	13-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB130,	FB130	06-Jul-2018	09-Jul-2018	13-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB130,	FB130	06-Jul-2018	09-Jul-2018	13-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB130,	FB130	06-Jul-2018	09-Jul-2018	13-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB130, TB130	FB130,	06-Jul-2018	11-Jul-2018	20-Jul-2018	✓	11-Jul-2018	20-Jul-2018	✓

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 Work Order : EM1810871
 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
RB130,	FB130	06-Jul-2018	09-Jul-2018	13-Jul-2018	✔	10-Jul-2018	18-Aug-2018	✔
Amber VOC Vial - Sulfuric Acid (EP080)								
RB130,	FB130,	06-Jul-2018	11-Jul-2018	20-Jul-2018	✔	11-Jul-2018	20-Jul-2018	✔
TB130								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
RB130,	FB130,	06-Jul-2018	11-Jul-2018	20-Jul-2018	✔	11-Jul-2018	20-Jul-2018	✔
TB130								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **✖** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	4	31	12.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	4	31	12.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	4	31	12.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	31	6.45	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1810873**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **ML, SH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **15**
No. of samples analysed : **9**

Page : 1 of 19
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 06-Jul-2018 17:30
Date Analysis Commenced : 09-Jul-2018
Issue Date : 16-Jul-2018 15:44



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH120_0.2m	NEL-BH120_1.0m	NEL-BH174_0.5m	NEL-BH174_1.5m	NEL-BH178_0.2m
Client sampling date / time					05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1810873-001	EM1810873-003	EM1810873-006	EM1810873-008	EM1810873-009
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.7	7.8	6.7	7.0	7.9
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		14.5	15.6	17.5	15.3	17.6
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		7	<5	6	7	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		25	24	13	28	17
Lead	7439-92-1	5	mg/kg		42	11	15	21	12
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		19	44	24	58	41
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		55	73	21	66	26
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		190	630	390	640	330
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH120_0.2m	NEL-BH120_1.0m	NEL-BH174_0.5m	NEL-BH174_1.5m	NEL-BH178_0.2m
Client sampling date / time					05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1810873-001	EM1810873-003	EM1810873-006	EM1810873-008	EM1810873-009
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH120_0.2m	NEL-BH120_1.0m	NEL-BH174_0.5m	NEL-BH174_1.5m	NEL-BH178_0.2m
Client sampling date / time				05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1810873-001	EM1810873-003	EM1810873-006	EM1810873-008	EM1810873-009
				Result	Result	Result	Result	Result

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH120_0.2m	NEL-BH120_1.0m	NEL-BH174_0.5m	NEL-BH174_1.5m	NEL-BH178_0.2m
Client sampling date / time				05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1810873-001	EM1810873-003	EM1810873-006	EM1810873-008	EM1810873-009
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH120_0.2m	NEL-BH120_1.0m	NEL-BH174_0.5m	NEL-BH174_1.5m	NEL-BH178_0.2m
Client sampling date / time					05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1810873-001	EM1810873-003	EM1810873-006	EM1810873-008	EM1810873-009
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		79.0	84.2	79.1	80.9	81.8
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		77.5	84.7	76.0	75.7	83.6
Toluene-D8	2037-26-5	0.1	%		94.9	73.0	105	84.3	96.2
4-Bromofluorobenzene	460-00-4	0.1	%		100	75.8	100	91.1	98.7
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		86.5	92.5	91.8	96.8	89.4
2-Chlorophenol-D4	93951-73-6	0.025	%		76.6	80.8	81.2	85.9	77.5
2,4,6-Tribromophenol	118-79-6	0.025	%		90.0	91.0	93.0	97.7	91.6
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		92.8	97.7	97.3	102	91.1
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		93.8	99.0	98.6	104	91.6
2-Fluorobiphenyl	321-60-8	0.025	%		84.7	89.6	90.1	95.4	86.1
Anthracene-d10	1719-06-8	0.025	%		99.8	107	106	113	103
4-Terphenyl-d14	1718-51-0	0.025	%		110	117	118	121	113



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-BH178_1.0m	----	----	----	----
Client sampling date / time				05-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1810873-011	-----	-----	-----	-----
Result				----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.2	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	21.2	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	11	----	----	----	----
Lead	7439-92-1	5	mg/kg	16	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	24	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	12	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	470	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH178_1.0m	----	----	----	----
Client sampling date / time					05-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1810873-011	-----	-----	-----	-----
				Result	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH178_1.0m	----	----	----	----
				Client sampling date / time	05-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1810873-011	-----	-----	-----	-----
					Result	----	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH178_1.0m	----	----	----	----
Client sampling date / time				05-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1810873-011	-----	-----	-----	-----
Result				----	----	----	----	----

EP075I: Organochlorine Pesticides - Continued

alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH178_1.0m	----	----	----	----
Client sampling date / time					05-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1810873-011	-----	-----	-----	-----
				Result		----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		83.7	----	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		66.6	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		78.3	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		86.4	----	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		86.3	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		73.4	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		86.6	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		85.6	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		87.2	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		78.7	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%		99.3	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		86.0	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB129	RB129	TB129	----	----
Client sampling date / time				05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810873-013	EM1810873-014	EM1810873-015	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.24	6.06	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB129	RB129	TB129	----	----
Client sampling date / time					05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810873-013	EM1810873-014	EM1810873-015	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB129	RB129	TB129	----	----
Client sampling date / time				05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810873-013	EM1810873-014	EM1810873-015	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB129	RB129	TB129	----	----
Client sampling date / time					05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810873-013	EM1810873-014	EM1810873-015	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		72.1	78.9	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		101	108	----	----	----
Toluene-D8	2037-26-5	5	%		95.0	85.1	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		99.6	92.9	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		21.4	17.8	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		50.6	33.2	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		45.1	39.3	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		61.7	49.6	----	----	----
Anthracene-d10	1719-06-8	1.0	%		65.3	61.8	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		65.7	72.3	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB129	RB129	TB129	----	----
Client sampling date / time					05-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1810873-013	EM1810873-014	EM1810873-015	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		32.3	34.8	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		85.7	93.0	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		89.0	100	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		87.8	97.6	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		91.2	102	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		109	115	----	----	----
Anthracene-d10	1719-06-8	0.25	%		99.5	112	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		106	123	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		95.0	101	94.0	----	----
Toluene-D8	2037-26-5	2	%		90.8	81.5	88.0	----	----
4-Bromofluorobenzene	460-00-4	2	%		93.3	78.5	86.2	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		<i>Recovery Limits (%)</i>	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Page 1 of 1

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale										PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format									
Project North East Link - Contamination		Contact Email David.Quinn@ghd.com		Address: 2 - 4 Westall Rd, Springvale																			
GHD Contact David Quinn		Quote No./GHD Reference ME124/18		Lab Contact: Shirley LeCornu																			
Standard TAT																							
Sample ID	Date	Time	Composite Sample	Sample Name Sample No. Year & No. Container	Preservative	Type J - Soil W - Water V - Vial G - Glass bottle P - Plastic bottle	Number	Volume (mL)	HOLD	Analyses Required													
1 NEL-BH120 - 0.2m	05/07/18	AM	/	S	/	J	1	250	X														
2 " " - 0.5m	"	"	/	S	/	J	1	"	X														
3 " " - 1.0m	"	"	/	S	/	J	1	"	X														
4 " " - 1.5m	"	"	/	S	/	J	1	"	X														
BH174	"	"	/	S	/	J	1	"	X														
5 NEL-BH174 - 0.2m	"	"	/	S	/	J	1	"	X														
6 " " - 0.5m	"	"	/	S	/	J	1	"	X														
7 " " - 1.0m	"	"	/	S	/	J	1	"	X														
8 " " - 1.5m	"	"	/	S	/	J	1	"	X														
9 NEL-BH178 - 0.2m	"	"	/	S	/	J	1	"	X														
10 " " - 0.5m	"	"	/	S	/	J	1	"	X														
11 " " - 1.0m	"	"	/	S	/	J	1	"	X														
12 " " - 1.5m	"	"	/	S	/	J	1	"	X														
13 FB129	"	"	/	W	/	VSP	8	"	X														
14 RB129	"	"	/	W	/	VSP	8	"	X														
15 TB129	"	"	/	W	/	V	1	"	X														

Environmental Division
Melbourne
Work Order Reference
EM1810873



Telephone: 61-0-8649 0600

Sampled by:	S. Hillard, M. Le Manco	Date/Time:	AM 05/07/18	Relinquished by:	S. Hillard	Date/Time:	05/07/18 PM
Received by:	Core shed fridge K. Holder	Date/Time:	PM 05/07/18	Relinquished by:	Core shed fridge	Date/Time:	06/07/18 PM
Received by Courier:	06/07/18 PM	Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Rm 1 (Vij)	Date/Time:	6/7/18 @ 5:30h				
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)						

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 9 July 2018 1:52 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: ON HOLD-EM1810871 & EM1810873-GHD-NORTH EAST LINK CONTAMINATION

Hi Shirley,

Please analyse the following at standard TAT:

EM1810871:

NEL-BH167_0.2m = IWRG621
NEL-BH167_0.5m = IWRG621

NEL-BH225_0.2m = IWRG621
NEL-BH225_1.0m = IWRG621

RB130 = IWRG621 water equivalent
FB130 = IWRG621 water equivalent
TB130 = Volatile TPH/BTEX

EM1810873:

1 NEL-BH120_0.2m = IWRG621
3 NEL-BH120_1.0m = IWRG621

6 NEL-BH174_0.5m = IWRG621
8 NEL-BH174_1.5m = IWRG621

9 NEL-BH178_0.2m = IWRG621
11 NEL-BH178_1.0m = IWRG621

13 FB129 = IWRG621 water equivalent
14 RB129 = IWRG621 water equivalent
15 TB129 = Volatile TPH/BTEX

Regards,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

-----Original Message-----

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Monday, 9 July 2018 7:54 AM

QUALITY CONTROL REPORT

Work Order	: EM1810873	Page	: 1 of 21
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 06-Jul-2018
Order number	: ----	Date Analysis Commenced	: 09-Jul-2018
C-O-C number	: ----	Issue Date	: 16-Jul-2018
Sampler	: ML, SH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 15		
No. of samples analysed	: 9		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1787938)									
EM1810784-011	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.3	8.2	1.21	0% - 20%
EM1810873-001	NEL-BH120_0.2m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.7	6.7	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1788113)									
EM1810871-006	Anonymous	EA055: Moisture Content	----	0.1	%	17.6	17.5	0.00	0% - 50%
EM1810904-001	Anonymous	EA055: Moisture Content	----	0.1	%	9.7	11.0	13.0	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1788815)									
EM1810851-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	92	82	10.8	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	9	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	39	33	16.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	33	35	5.45	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	109	111	2.23	0% - 20%
EM1810851-010	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	78	79	1.56	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	30	27	13.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	8	49.6	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1788815) - continued									
EM1810851-010	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	80	60	27.8	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1788818)									
EM1810964-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	7	7	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	8	18.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	29	13	76.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	32	30	5.67	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EM1810873-008	NEL-BH174_1.5m	EG005T: Zinc	7440-66-6	5	mg/kg	82	62	28.4	0% - 50%
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	58	54	8.52	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	27	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	21	19	11.1	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1788816)	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.00	No Limit
		EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1788471)									
EM1810851-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1788472)									
EM1810873-008	NEL-BH174_1.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810911-022	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1791966)									
EM1810871-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1810873-011	NEL-BH178_1.0m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1787014)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK040T: Fluoride Total (QC Lot: 1787014) - continued									
EM1810779-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	340	330	0.00	No Limit
EM1810873-003	NEL-BH120_1.0m	EK040T: Fluoride	16984-48-8	40	mg/kg	630	570	10.0	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1787809)									
EM1810871-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1810911-005	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.2	<0.2	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1787026)									
EM1810871-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810911-001	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
	EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit	
EP074H: Naphthalene (QC Lot: 1787026)									
EM1810871-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1810911-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1787026)									
EM1810871-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1787026) - continued									
EM1810871-001	Anonymous	EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1810911-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1787807)							
EM1810871-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1810911-005	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.07	<0.06	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1787807) - continued									
EM1810911-005	Anonymous	EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.13	<0.13	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1787807)									
EM1810871-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1810911-005	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1787807)	Anonymous	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1787807) - continued									
EM1810871-001	Anonymous	EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1810911-005	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1787807)									
EM1810871-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1810911-005	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.07	<0.06	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1787807) - continued									
EM1810911-005	Anonymous	EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.07	<0.06	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.07	<0.06	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1787026)									
EM1810871-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1810911-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1787808)									
EM1810911-005	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1810871-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1787026)									
EM1810871-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1810911-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1787808)									
EM1810911-005	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1810871-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1787808) - continued									
EM1810871-001	Anonymous	EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1787508)									
EM1810779-006	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.34	6.23	1.75	0% - 20%
EM1810874-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.12	7.14	0.280	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1787547)									
EM1810779-005	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1787548)									
EM1810903-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.023	0.022	5.88	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.024	0.024	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1810779-005	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1787546)									
EM1810382-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1810871-009	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1788463)									
EM1810871-008	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1788156)									
EM1810779-005	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1810912-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.024	0.024	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1787507)									
EM1810882-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	2.2	2.3	0.00	0% - 20%
EM1810779-006	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1810882-003	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit

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 Work Order : EM1810873
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074G: Trihalomethanes (QC Lot: 1787440)									
EM1810779-005	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1810882-003	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1787441)									
EM1810779-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1810882-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1787441)									
EM1810779-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1810882-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1787441)									
EM1810779-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1810882-003	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1788815)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	91.8	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.0	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	94.0	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	90.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	102	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	96.1	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	103	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	80.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	92.5	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	96.6	82	111
EG005T: Total Metals by ICP-AES (QCLot: 1788818)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	90.6	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.1	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	94.7	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	91.2	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	102	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	97.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	103	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.6	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	105	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	97.2	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1788816)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.1	77	104
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1788817)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	89.7	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1788471)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	92.3	75	112
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1788472)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	87.9	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1791966)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	98.4	80	110
EK040T: Fluoride Total (QCLot: 1787014)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	86.8	75	110



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1787809)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	88.3	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1787026)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	81.3	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	101	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	98.5	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	102	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	111	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	104	74	114
EP074H: Naphthalene (QCLot: 1787026)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	92.4	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1787026)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	75.4	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	76.6	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	92.2	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	77.0	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	90.3	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	86.8	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	81.9	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	71.2	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	91.0	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	83.4	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	104	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	92.1	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	82.8	70	119
EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	112	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	70.1	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	83.0	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	78.9	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	80.6	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	72.8	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1787807)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	85.5	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	114	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	89.9	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	101	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	108	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	117	60	126



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1787807) - continued								
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	85.7	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	80.6	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	95.2	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1787807)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	94.5	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	91.3	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	98.2	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	112	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	117	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	108	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	70.1	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	72.3	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	77.9	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	96.5	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1787807)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	90.4	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	87.5	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	98.6	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	89.6	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	89.4	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	113	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	88.4	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	88.4	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	93.3	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	91.2	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	90.0	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	90.6	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	82.8	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	83.3	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	81.3	55	137
EP075I: Organochlorine Pesticides (QCLot: 1787807)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	88.0	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	89.2	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	89.4	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	87.2	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	93.5	68	133



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
EP075I: Organochlorine Pesticides (QCLot: 1787807) - continued								
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	90.6	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	88.7	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	89.5	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	89.2	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	88.8	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	75.7	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	93.0	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	83.6	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	64.9	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	93.8	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	88.2	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	88.7	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	88.4	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	89.5	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	88.6	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787026)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	97.8	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787808)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	98.5	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	103	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	93.2	77	116
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787026)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	93.9	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787808)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	98.2	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	99.4	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	94.1	68	124

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787547)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	93.2	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787548)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	103	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	93.0	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.7	82	103



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EG020F: Dissolved Metals by ICP-MS (QCLot: 1787548) - continued								
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	98.3	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	96.2	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1787546)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.4	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1788463)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	106	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1788156)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	91.7	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1787507)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	109	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1785776)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	66.2	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1787440)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	105	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1787440)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	104	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	95.8	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	103	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	97.8	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	99.7	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	91.4	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	87.0	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	99.9	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	103	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	104	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	105	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	94.4	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	107	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	103	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1787440)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	106	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	101	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	103	82	112



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074F: Halogenated Aromatic Compounds (QCLot: 1787440) - continued								
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	98.2	62	119
EP074G: Trihalomethanes (QCLot: 1787440)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	99.6	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1785777)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	72.6	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	76.8	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	78.2	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	81.2	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	82.1	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	82.7	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	84.6	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	82.9	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	81.0	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	82.1	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	90.3	52	131
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	92.1	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	91.3	56	126
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	82.1	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	81.3	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	83.6	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1785779)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	88.7	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	81.7	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	93.0	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	86.0	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	108	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	90.6	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	103	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	97.4	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	91.3	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1785779)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	33.5	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	80.8	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	67.8	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	86.0	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	96.0	52	128



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1785779) - continued								
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	128	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	32.7	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	86.0	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	90.1	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	135	32	135
EP075I: Organochlorine Pesticides (QCLot: 1785779)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	88.0	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	108	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	105	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	110	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	107	60	132
EP075-EM: 4,4`-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	111	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	107	59	130
EP075-EM: 4,4`-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	108	62	136
EP075-EM: 4,4`-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	108	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1785778)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	79.9	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	84.5	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	90.0	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787441)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	89.7	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1785778)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	82.0	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	87.8	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	90.1	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787441)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	84.4	66	123
EP080: BTEXN (QCLot: 1787441)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	105	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	89.9	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	95.8	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	93.5	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	98.3	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	106	74	124

Matrix Spike (MS) Report



The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1788815)							
EM1810851-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	86.3	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	86.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	111	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	104	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	83.8	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	93.6	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	80.4	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	118	74	128
EG005T: Total Metals by ICP-AES (QCLot: 1788818)							
EM1810873-009	NEL-BH178_0.2m	EG005T: Arsenic	7440-38-2	50 mg/kg	106	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.9	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	100	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	104	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	95.7	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	78.5	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	93.5	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	94.0	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1788816)							
EM1810851-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	103	76	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1788817)							
EM1810873-009	NEL-BH178_0.2m	EG035T: Mercury	7439-97-6	5 mg/kg	100	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1788471)							
EM1810851-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	78.9	58	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1788472)							
EM1810873-009	NEL-BH178_0.2m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	96.6	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1791966)							
EM1810871-002	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	94.1	77	113
EK040T: Fluoride Total (QCLot: 1787014)							
EM1810779-004	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	85.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1787809)							
EM1810871-006	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	99.2	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1787026)							
EM1810871-002	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	75.3	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	71.6	56	134

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 Work Order : EM1810873
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035F: Dissolved Mercury by FIMS (QCLot: 1787546) - continued							
EM1810382-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	80.1	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1788463)							
EM1810871-009	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	102	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1788156)							
EM1810779-006	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	93.2	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1787507)							
EM1810492-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	114	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1787440)							
EM1810779-006	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	101	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	91.7	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1787440)							
EM1810779-006	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	98.6	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1787441)							
EM1810779-006	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	65.6	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1787441)							
EM1810779-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	62.4	44	122
EP080: BTEXN (QCLot: 1787441)							
EM1810779-006	Anonymous	EP080: Benzene	71-43-2	20 µg/L	97.0	68	130
		EP080: Toluene	108-88-3	20 µg/L	94.1	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1810873	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 06-Jul-2018
Site	: ----	Issue Date	: 16-Jul-2018
Sampler	: ML, SH	No. of samples received	: 15
Order number	:	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
FB129, RB129	----	----	----	10-Jul-2018	05-Jul-2018	5

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)		05-Jul-2018	10-Jul-2018	12-Jul-2018	✔	10-Jul-2018	10-Jul-2018	✔
NEL-BH120_0.2m,	NEL-BH120_1.0m,							
NEL-BH174_0.5m,	NEL-BH174_1.5m,							
NEL-BH178_0.2m,	NEL-BH178_1.0m							



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	----	----	----	10-Jul-2018	19-Jul-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	10-Jul-2018	01-Jan-2019	✓	11-Jul-2018	01-Jan-2019	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	10-Jul-2018	02-Aug-2018	✓	11-Jul-2018	02-Aug-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	11-Jul-2018	02-Aug-2018	✓	11-Jul-2018	18-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	11-Jul-2018	19-Jul-2018	✓	12-Jul-2018	25-Jul-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	10-Jul-2018	02-Aug-2018	✓	11-Jul-2018	02-Aug-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	10-Jul-2018	19-Jul-2018	✓	10-Jul-2018	19-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	09-Jul-2018	12-Jul-2018	✓	11-Jul-2018	12-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	09-Jul-2018	12-Jul-2018	✔	11-Jul-2018	12-Jul-2018	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	09-Jul-2018	12-Jul-2018	✔	11-Jul-2018	12-Jul-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	10-Jul-2018	19-Jul-2018	✔	10-Jul-2018	19-Aug-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	10-Jul-2018	19-Jul-2018	✔	10-Jul-2018	19-Aug-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	10-Jul-2018	19-Jul-2018	✔	10-Jul-2018	19-Aug-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	10-Jul-2018	19-Jul-2018	✔	10-Jul-2018	19-Aug-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	09-Jul-2018	12-Jul-2018	✔	11-Jul-2018	12-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-BH120_0.2m, NEL-BH174_0.5m, NEL-BH178_0.2m,	NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_1.0m	05-Jul-2018	10-Jul-2018	19-Jul-2018	✔	10-Jul-2018	19-Aug-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH120_0.2m,	NEL-BH120_1.0m,	05-Jul-2018	09-Jul-2018	12-Jul-2018	✔	11-Jul-2018	12-Jul-2018	✔
NEL-BH174_0.5m,	NEL-BH174_1.5m,							
NEL-BH178_0.2m,	NEL-BH178_1.0m							
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-BH120_0.2m,	NEL-BH120_1.0m,	05-Jul-2018	10-Jul-2018	19-Jul-2018	✔	10-Jul-2018	19-Aug-2018	✔
NEL-BH174_0.5m,	NEL-BH174_1.5m,							
NEL-BH178_0.2m,	NEL-BH178_1.0m							

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) FB129, RB129	05-Jul-2018	----	----	----	10-Jul-2018	05-Jul-2018	✗	
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) FB129, RB129	05-Jul-2018	----	----	----	10-Jul-2018	01-Jan-2019	✓	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) FB129, RB129	05-Jul-2018	----	----	----	10-Jul-2018	19-Jul-2018	✓	
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) FB129, RB129	05-Jul-2018	----	----	----	10-Jul-2018	02-Aug-2018	✓	
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF) FB129, RB129	05-Jul-2018	----	----	----	10-Jul-2018	19-Jul-2018	✓	
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) FB129, RB129	05-Jul-2018	----	----	----	10-Jul-2018	02-Aug-2018	✓	
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) FB129, RB129	05-Jul-2018	09-Jul-2018	12-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓	
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) FB129, RB129	05-Jul-2018	11-Jul-2018	19-Jul-2018	✓	11-Jul-2018	19-Jul-2018	✓	
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB129, RB129	05-Jul-2018	11-Jul-2018	19-Jul-2018	✓	11-Jul-2018	19-Jul-2018	✓	



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) FB129, RB129	05-Jul-2018	11-Jul-2018	19-Jul-2018	✓	11-Jul-2018	19-Jul-2018	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074) FB129, RB129	05-Jul-2018	11-Jul-2018	19-Jul-2018	✓	11-Jul-2018	19-Jul-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB129, RB129	05-Jul-2018	09-Jul-2018	12-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) FB129, RB129	05-Jul-2018	09-Jul-2018	12-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) FB129, RB129	05-Jul-2018	09-Jul-2018	12-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075-EM) FB129, RB129	05-Jul-2018	09-Jul-2018	12-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) FB129, RB129	05-Jul-2018	09-Jul-2018	12-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB129, RB129, TB129	05-Jul-2018	11-Jul-2018	19-Jul-2018	✓	11-Jul-2018	19-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) FB129, RB129	05-Jul-2018	09-Jul-2018	12-Jul-2018	✓	10-Jul-2018	18-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB129, RB129, TB129	05-Jul-2018	11-Jul-2018	19-Jul-2018	✓	11-Jul-2018	19-Jul-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) FB129, RB129, TB129	05-Jul-2018	11-Jul-2018	19-Jul-2018	✓	11-Jul-2018	19-Jul-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	37	10.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	37	5.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1810875**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **13**
No. of samples analysed : **13**

Page : 1 of 9
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 31-May-2018 17:10
Date Analysis Commenced : 09-Jul-2018
Issue Date : 12-Jul-2018 15:15



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- This is a rebatch of EM1810220/10219/08885/09532/09961/09816/09614/09231.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-BH201_1.0m	NEL-BH135_0.2m	NEL-BH202_0.2m	QC1006	NEL-BH163_1.0m
Client sampling date / time				06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1810875-001	EM1810875-002	EM1810875-003	EM1810875-004	EM1810875-006
				Result	Result	Result	Result	Result
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	----	----	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	----	<0.5	<0.5	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	----	----	35.6	27.3	----
2-Chlorophenol-D4	93951-73-6	1.0	%	----	----	75.0	62.5	----
2,4,6-Tribromophenol	118-79-6	1.0	%	----	----	99.7	97.4	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	----	----	83.1	68.7	----
Anthracene-d10	1719-06-8	1.0	%	----	----	89.7	89.1	----
4-Terphenyl-d14	1718-51-0	1.0	%	----	----	85.4	87.7	----



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-BH200_0.5m	NEL-BH200_1.0m	NEL-BH204_0.5m	NEL-BH223_0.5m	NEL-EF-BH015_0.5
Client sampling date / time				06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1810875-007	EM1810875-008	EM1810875-009	EM1810875-010	EM1810875-011
				Result	Result	Result	Result	Result
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-EF-BH018_0.2	NEL-EF-BF019_0.2m	NEL-EF-BF019_1.0m	----	----
Client sampling date / time				06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810875-012	EM1810875-013	EM1810875-014	-----	-----
				Result	Result	Result	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH201_1.0m	NEL-BH135_0.2m	NEL-BH202_0.2m	QC1006	NEL-BH163_1.0m
Client sampling date / time				06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1810875-001	EM1810875-002	EM1810875-003	EM1810875-004	EM1810875-006
				Result	Result	Result	Result	Result
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	6.3	5.8	6.8	6.9	6.3
After HCl pH	----	0.1	pH Unit	1.1	1.1	1.2	1.2	1.2
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	5.0	5.0
Final pH	----	0.1	pH Unit	5.0	5.0	5.0	5.1	5.0



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH200_0.5m	NEL-BH200_1.0m	NEL-BH204_0.5m	NEL-BH223_0.5m	NEL-EF-BH015_0.5
Client sampling date / time				06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1810875-007	EM1810875-008	EM1810875-009	EM1810875-010	EM1810875-011
				Result	Result	Result	Result	Result
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	6.1	6.7	5.8	5.5	7.4
After HCl pH	----	0.1	pH Unit	1.2	1.3	1.2	1.2	1.2
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	5.0	5.0
Final pH	----	0.1	pH Unit	5.0	5.0	5.1	5.0	5.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-EF-BH018_0.2	NEL-EF-BF019_0.2m	NEL-EF-BF019_1.0m	----	----
Client sampling date / time				06-Jul-2018 00:00	06-Jul-2018 00:00	06-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1810875-012	EM1810875-013	EM1810875-014	-----	-----
				Result	Result	Result	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	6.3	6.2	5.7	----	----
After HCl pH	----	0.1	pH Unit	1.2	1.3	1.2	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	----	----
Final pH	----	0.1	pH Unit	5.0	5.0	5.0	----	----



Surrogate Control Limits

Sub-Matrix: ASLP LEACHATE

		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127

Shirley LeCornu

MS: 2701-2702

Environmental Division
Melbourne

Work Order Reference

EM1810875

From: David Quinn <David.Quinn@ghd.com>
Sent: Friday, 6 July 2018 4:59 PM
To: Shirley LeCornu
Cc: Kory.Auch@ghd.com
Subject: NEL rebatch request



Telephone : 03-9549 0600

Hi Shirley

Can we please have leachability analysis done for the following samples at standard TAT. Can this please be done as one work order?

Date	Lab Report No.	Sample ID	Leachability analysis
22/06/2018	EM1810220 #3	NEL-BH201_1.0m	Lead
25/06/2018	EM1810219 #1	NEL-BH135_0.2m	Lead
25/06/2018	EM1810219 #4	NEL-BH202_0.2m	Benzo(a) pyrene
25/06/2018	EM1810219 #8	QC1006	Benzo(a) pyrene
31/05/2018	EM1808885 #3	NEL-BH155_1.0m	Lead and Nickel
13/06/2018	EM1809532 #34	NEL-BH163_1.0m	Lead
20/06/2018	EM1809961 #2	NEL-BH200_0.5m	Lead
20/06/2018	EM1809961 #3	NEL-BH200_1.0m	Lead
18/06/2018	EM1809816 #6	NEL-BH204_0.5m	Lead
13/06/2018	EM1809532 #9	NEL-BH223_0.5m	Lead
14/06/2018	EM1809614 #6	NEL-EF-BH015_0.5	Lead
14/06/2018	EM1809614 #9	NEL-EF-BH018_0.2	Lead
7/06/2018	EM1809231 #1	NEL-EF-BH019_0.2m	Lead
7/06/2018	EM1809231 #3	NEL-EF-BH019_1.0m	Lead

MS 2358

MS 2357

MS 2317-18

MS 2408-9

MS 2481

MS 2481

MS 2408-9

MS 2399-400

MS 2305

Have a great weekend

Thanks,

David Quinn

Senior Environmental Engineer

Waste Management & Environmental Compliance

* add time expires Monday

GHD

Proudly employee owned

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Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the *Inside Waste Consultants Review*

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**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1810875**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 31-May-2018 17:10	Issue Date	: 06-Jul-2018
Client Requested Due Date	: 13-Jun-2018	Scheduled Reporting Date	: 13-Jun-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 14 / 14

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1810220/10219/08885/09532/09961/09816/09614/09231.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN60a ASLP Leachate Procedure	SOIL - EP075 SIM PAH only SIM - PAH only
EM1810875-001	06-Jul-2018 00:00	NEL-BH201_1.0m	✓	✓	
EM1810875-002	06-Jul-2018 00:00	NEL-BH135_0.2m	✓	✓	
EM1810875-003	06-Jul-2018 00:00	NEL-BH202_0.2m		✓	✓
EM1810875-004	06-Jul-2018 00:00	QC1006		✓	✓
EM1810875-005	06-Jul-2018 00:00	NEL-BH155_1.0m	✓	✓	
EM1810875-006	06-Jul-2018 00:00	NEL-BH163_1.0m	✓	✓	
EM1810875-007	06-Jul-2018 00:00	NEL-BH200_0.5m	✓	✓	
EM1810875-008	06-Jul-2018 00:00	NEL-BH200_1.0m	✓	✓	
EM1810875-009	06-Jul-2018 00:00	NEL-BH204_0.5m	✓	✓	
EM1810875-010	06-Jul-2018 00:00	NEL-BH223_0.5m	✓	✓	
EM1810875-011	06-Jul-2018 00:00	NEL-EF-BH015_0.5	✓	✓	
EM1810875-012	06-Jul-2018 00:00	NEL-EF-BH018_0.2	✓	✓	
EM1810875-013	06-Jul-2018 00:00	NEL-EF-BF019_0.2m	✓	✓	
EM1810875-014	06-Jul-2018 00:00	NEL-EF-BF019_1.0m	✓	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

ALL ACCOUNTS

Email ap-fss@ghd.com

Email david.quinn@ghd.com

- [illegible]

Email GHDLabreports@ghd.com

- | | |
|-------|-----------------------|
| Email | GHDLabreports@ghd.com |
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Email kory.auch@ghd.com

- [illegible]

QUALITY CONTROL REPORT

Work Order	: EM1810875	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 31-May-2018
Order number	: ----	Date Analysis Commenced	: 09-Jul-2018
C-O-C number	: ----	Issue Date	: 12-Jul-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 13		
No. of samples analysed	: 13		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1791680)									
EM1810875-001	NEL-BH201_1.0m	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1810875-013	NEL-EF-BF019_0.2m	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit		Result		LCS	Low
EG005C: Leachable Metals by ICPAES (QCLot: 1791680)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	103	88	113
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1788336)								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	90.1	56	126

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1791680)							
EM1810875-002	NEL-BH135_0.2m	EG005C: Lead	7439-92-1	1 mg/L	87.1	86	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1810875**

Page : 1 of 5

Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Project : **31350060910**
Site : **----**
Sampler : **----**
Order number :

Laboratory : **Environmental Division Melbourne**
Telephone : **+61-3-8549 9630**
Date Samples Received : **31-May-2018**
Issue Date : **12-Jul-2018**
No. of samples received : **13**
No. of samples analysed : **13**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	9	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	9	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN60a) NEL-BH202_0.2m, QC1006	06-Jul-2018	09-Jul-2018	20-Jul-2018	✔	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH201_1.0m, NEL-BH135_0.2m, NEL-BH163_1.0m, NEL-BH200_0.5m, NEL-BH200_1.0m, NEL-BH204_0.5m, NEL-BH223_0.5m, NEL-EF-BH015_0.5, NEL-EF-BH018_0.2, NEL-EF-BF019_0.2m, NEL-EF-BF019_1.0m	06-Jul-2018	09-Jul-2018	02-Jan-2019	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG005C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)								
NEL-BH201_1.0m,	NEL-BH135_0.2m,	09-Jul-2018	11-Jul-2018	05-Jan-2019	✔	11-Jul-2018	05-Jan-2019	✔
NEL-BH163_1.0m,	NEL-BH200_0.5m,							
NEL-BH200_1.0m,	NEL-BH204_0.5m,							
NEL-BH223_0.5m,	NEL-EF-BH015_0.5,							
NEL-EF-BH018_0.2,	NEL-EF-BF019_0.2m,							
NEL-EF-BF019 1.0m								



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) NEL-BH202_0.2m, QC1006	09-Jul-2018	10-Jul-2018	16-Jul-2018	✓	11-Jul-2018	19-Aug-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	9	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	9	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
Separatory Funnel Extraction of Liquids	ORG14	SOIL	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CERTIFICATE OF ANALYSIS

Work Order : **EM1811071**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **KH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **15**
No. of samples analysed : **9**

Page : 1 of 19
Laboratory : Environmental Division Melbourne
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Date Samples Received : 11-Jul-2018 12:50
Date Analysis Commenced : 16-Jul-2018
Issue Date : 19-Jul-2018 16:23



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH003_0.5m	NEL-EF-BH003_1.0m	NEL-EF-BH006_0.5m	NEL-EF-BH006_1.5m	NEL-EF-BH014_0.5m
Client sampling date / time					09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811071-002	EM1811071-003	EM1811071-006	EM1811071-008	EM1811071-010
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.8	6.6	6.8	6.9	5.5
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		11.5	11.2	14.5	23.4	11.6
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	12
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		10	<5	12	12	23
Lead	7439-92-1	5	mg/kg		10	8	14	11	36
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		21	9	17	22	24
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		33	11	32	20	58
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		300	210	220	270	380
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-EF-BH003_0.5m	NEL-EF-BH003_1.0m	NEL-EF-BH006_0.5m	NEL-EF-BH006_1.5m	NEL-EF-BH014_0.5m
Client sampling date / time				09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811071-002	EM1811071-003	EM1811071-006	EM1811071-008	EM1811071-010
				Result	Result	Result	Result	Result
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-EF-BH003_0.5m	NEL-EF-BH003_1.0m	NEL-EF-BH006_0.5m	NEL-EF-BH006_1.5m	NEL-EF-BH014_0.5m
Client sampling date / time				09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811071-002	EM1811071-003	EM1811071-006	EM1811071-008	EM1811071-010
				Result	Result	Result	Result	Result

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-EF-BH003_0.5m	NEL-EF-BH003_1.0m	NEL-EF-BH006_0.5m	NEL-EF-BH006_1.5m	NEL-EF-BH014_0.5m
Client sampling date / time				09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811071-002	EM1811071-003	EM1811071-006	EM1811071-008	EM1811071-010
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	0.12
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	0.12
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	0.12
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH003_0.5m	NEL-EF-BH003_1.0m	NEL-EF-BH006_0.5m	NEL-EF-BH006_1.5m	NEL-EF-BH014_0.5m
Client sampling date / time					09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811071-002	EM1811071-003	EM1811071-006	EM1811071-008	EM1811071-010
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		89.4	84.1	88.6	86.9	72.2
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		62.9	85.2	90.6	73.8	81.8
Toluene-D8	2037-26-5	0.1	%		67.9	85.4	94.6	72.6	81.8
4-Bromofluorobenzene	460-00-4	0.1	%		72.3	91.8	100	77.5	86.5
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		119	111	107	98.6	93.2
2-Chlorophenol-D4	93951-73-6	0.025	%		85.7	80.2	83.3	87.0	82.8
2,4,6-Tribromophenol	118-79-6	0.025	%		89.2	84.2	79.8	82.6	75.9
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		96.6	93.4	92.9	91.4	87.9
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		90.8	86.6	89.5	90.2	88.9
2-Fluorobiphenyl	321-60-8	0.025	%		111	104	136	135	135
Anthracene-d10	1719-06-8	0.025	%		99.2	94.7	98.6	98.6	91.4
4-Terphenyl-d14	1718-51-0	0.025	%		106	101	115	119	109



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-EF-BH014_1.0m	----	----	----	----
Client sampling date / time				09-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1811071-011	-----	-----	-----	-----
Result				----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	4.8	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	26.2	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	15	----	----	----	----
Lead	7439-92-1	5	mg/kg	15	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	17	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	26	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	520	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH014_1.0m	----	----	----	----
Client sampling date / time					09-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1811071-011	-----	-----	-----	-----
				Result	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH014_1.0m	----	----	----	----
Client sampling date / time				09-Jul-2018 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EM1811071-011	-----	-----	-----	-----	
Result				----	----	----	----		

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH014_1.0m	----	----	----	----
Client sampling date / time					09-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1811071-011	-----	-----	-----	-----
				Result	----	----	----	----	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH014_1.0m	----	----	----	----
Client sampling date / time					09-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1811071-011	-----	-----	-----	-----
Result						----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		66.8	----	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		77.1	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		77.5	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		82.9	----	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		93.0	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		68.4	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		62.2	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		81.3	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		75.5	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		118	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%		81.7	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		98.0	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB131	RB131	TB131	----	----
Client sampling date / time				09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1811071-013	EM1811071-014	EM1811071-015	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.20	6.04	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB131	RB131	TB131	----	----
Client sampling date / time					09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1811071-013	EM1811071-014	EM1811071-015	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB131	RB131	TB131	----	----
Client sampling date / time				09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1811071-013	EM1811071-014	EM1811071-015	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB131	RB131	TB131	----	----
Client sampling date / time					09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1811071-013	EM1811071-014	EM1811071-015	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		88.3	70.7	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		99.3	98.2	----	----	----
Toluene-D8	2037-26-5	5	%		80.6	78.4	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		97.3	96.9	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		32.2	29.6	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		73.8	68.4	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		63.5	59.4	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		87.9	76.3	----	----	----
Anthracene-d10	1719-06-8	1.0	%		94.2	77.3	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		102	84.6	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB131	RB131	TB131	----	----
Client sampling date / time					09-Jul-2018 00:00	09-Jul-2018 00:00	09-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1811071-013	EM1811071-014	EM1811071-015	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		28.0	28.6	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		65.3	68.2	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		38.3	42.8	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		68.3	71.4	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		73.9	78.8	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		76.0	81.5	----	----	----
Anthracene-d10	1719-06-8	0.25	%		102	112	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		98.6	107	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		86.8	86.9	89.9	----	----
Toluene-D8	2037-26-5	2	%		78.1	75.2	79.7	----	----
4-Bromofluorobenzene	460-00-4	2	%		100	101	106	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Received by Nisaleel 11/7/18
(ACS) 12:50
Page 1 of 1

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format													
Project North East Link - Contamination		Contact Email David.Quinn@ghd.com		Address: 2 - 4 Westall Rd, Springvale															
GHD Contact David Quinn		Quote No./GHD Reference ME/124/18		Lab Contact: Shirley LeCornu															
Standard TAT																			
Sample ID	Date	Time	Composite Sample	Sample Matrix Sludge W-Water A-Air GW Chlorinated	Preservative	Container Type W-Vial G-Glass bottle P-Plastic bottle	Number	Volume (mL)	HOLD	Analyses Required									
1 NEL-EF-BH007-0.2m	09/07/18	Am	/	S	/	J	1	250	X										
2 " " -0.5m	"	"	/	S	/	J	1	"	X										
3 " " -1.0m	"	"	/	S	/	J	1	"	X										
4 " " -1.5m	"	"	/	S	/	J	1	"	X										
5 NEL-EF-BH006-0.2m	"	"	/	S	/	J	1	"	X										
6 " " -0.5m	"	"	/	S	/	J	1	"	X										
7 " " -1.0m	"	"	/	S	/	J	1	"	X										
8 " " -1.5m	"	"	/	S	/	J	1	"	X										
9 NEL-EF-BH004-0.2m	"	"	/	S	/	J	1	"	X										
10 " " -0.5m	"	"	/	S	/	J	1	"	X										
11 " " -1.0m	"	"	/	S	/	J	1	"	X										
12 " " -1.5m	"	"	/	S	/	J	1	"	X										
13 FB131	"	"	/	W	/	VGP	8	"	X										
14 RB131	"	"	/	W	/	VGP	8	"	X										
15 TB131	"	"	/	W	/	V	1	"	X										

Environmental Division
Melbourne
Work Order Reference
EM1811071



Telephone: + 61-3-8649 3500

Sampled by:	Keith Holden GHD	Date/Time:	09/07/18 Am	Relinquished by:	KH	Date/Time:	09/07/18 Pm
Received by:	Core shed fridge	Date/Time:	09/07/18 Pm	Relinquished by:	Core shed fridge	Date/Time:	11/07/18 Am
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:		Date/Time:					
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)						

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Friday, 13 July 2018 3:48 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: On Hold - EM1811071 - GHDSER (31350060910)
Attachments: 11072018181939-0001.pdf; 11072018182148-0001.pdf

Hi Shirley, sorry for the delay on these samples, just getting around to my emails.

Please analyse the following at standard TAT:

EM1811071:

2 NEL-EF-BH003_0.5m = IWRG621

3 NEL-EF-BH003_1.0m = IWRG621

6 NEL-EF-BH006_0.5m = IWRG621

8 NEL-EF-BH006_1.5m = IWRG621

10 NEL-EF-BH014_0.5m = IWRG621

11 NEL-EF-BH014_1.0m = IWRG621

FB131 = IWRG621 water equivalent

RB131 = IWRG621 water equivalent

TB131 = Volatile TPH/BTEX

EM1811072:

NEL-BH079_0.5m = IWRG621

NEL-BH079_1.0m = IWRG621

NEL-BH184_0.2m = IWRG621

NEL-BH195_0.5m = IWRG621

NEL-BH195_1.0m = IWRG621

RB132 = IWRG621 water equivalent

FB132 = IWRG621 water equivalent

TB132 = Volatile TPH/BTEX

Regards,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>

Sent: Thursday, 12 July 2018 7:39 AM

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1811071

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: KH		

Dates

Date Samples Received	: 11-Jul-2018 12:50	Issue Date	: 16-Jul-2018
Client Requested Due Date	: 20-Jul-2018	Scheduled Reporting Date	: 20-Jul-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 2.9°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 15 / 9

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
FB131	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB131	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
FB131	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB131	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
FB131	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB131	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1811071-001	09-Jul-2018 00:00	NEL-EF-BH003_0.2m	✓		
EM1811071-002	09-Jul-2018 00:00	NEL-EF-BH003_0.5m		✓	✓
EM1811071-003	09-Jul-2018 00:00	NEL-EF-BH003_1.0m		✓	✓
EM1811071-004	09-Jul-2018 00:00	NEL-EF-BH003_1.5m	✓		
EM1811071-005	09-Jul-2018 00:00	NEL-EF-BH006_0.2m	✓		
EM1811071-006	09-Jul-2018 00:00	NEL-EF-BH006_0.5m		✓	✓
EM1811071-007	09-Jul-2018 00:00	NEL-EF-BH006_1.0m	✓		
EM1811071-008	09-Jul-2018 00:00	NEL-EF-BH006_1.5m		✓	✓
EM1811071-009	09-Jul-2018 00:00	NEL-EF-BH014_0.2m	✓		
EM1811071-010	09-Jul-2018 00:00	NEL-EF-BH014_0.5m		✓	✓
EM1811071-011	09-Jul-2018 00:00	NEL-EF-BH014_1.0m		✓	✓
EM1811071-012	09-Jul-2018 00:00	NEL-EF-BH014_1.5m	✓		

QUALITY CONTROL REPORT

Work Order	: EM1811071	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 11-Jul-2018
Order number	: ----	Date Analysis Commenced	: 16-Jul-2018
C-O-C number	: ----	Issue Date	: 19-Jul-2018
Sampler	: KH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 15		
No. of samples analysed	: 9		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1802443)									
EM1811071-002	NEL-EF-BH003_0.5m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.8	7.0	2.90	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1802770)									
EM1811071-002	NEL-EF-BH003_0.5m	EA055: Moisture Content	----	0.1	%	11.5	11.6	0.962	0% - 50%
EM1811174-005	Anonymous	EA055: Moisture Content	----	0.1	%	19.5	19.9	2.05	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1803392)									
EM1811071-002	NEL-EF-BH003_0.5m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	21	21	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	10	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	10	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	33	32	0.00	No Limit
EM1811291-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	55	56	0.00	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	15	15	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	9	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1803392) - continued									
EM1811291-003	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	22	21	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1803391)									
EM1811071-002	NEL-EF-BH003_0.5m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811291-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1803749)									
EM1811071-002	NEL-EF-BH003_0.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811123-029	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1805988)									
EM1811071-002	NEL-EF-BH003_0.5m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1811174-022	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1803212)									
EM1811071-002	NEL-EF-BH003_0.5m	EK040T: Fluoride	16984-48-8	40	mg/kg	300	320	6.22	No Limit
EM1811278-004	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	340	280	20.3	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1803197)									
EM1811071-002	NEL-EF-BH003_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811174-029	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1802444)									
EM1811071-002	NEL-EF-BH003_0.5m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1802444)									
EM1811071-002	NEL-EF-BH003_0.5m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1802444)									
EM1811071-002	NEL-EF-BH003_0.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1802444) - continued									
EM1811071-002	NEL-EF-BH003_0.5m	EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1803193)									
EM1811071-002	NEL-EF-BH003_0.5m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1811174-029	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1803193)									
EM1811071-002	NEL-EF-BH003_0.5m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
EM1811174-029	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1803193) - continued									
EM1811174-029	Anonymous	EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1803193)									
EM1811071-002	NEL-EF-BH003_0.5m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811174-029	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1803193) - continued									
EM1811174-029	Anonymous	EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1803193)									
EM1811071-002	NEL-EF-BH003_0.5m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1811174-029	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit

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 Client : GHD PTY LTD
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Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1803193) - continued									
EM1811174-029	Anonymous	EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1802444)									
EM1811071-002	NEL-EF-BH003_0.5m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1803196)									
EM1811071-002	NEL-EF-BH003_0.5m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1811174-029	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1802444)									
EM1811071-002	NEL-EF-BH003_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1803196)									
EM1811071-002	NEL-EF-BH003_0.5m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1811174-029	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1805197)									
EM1811071-014	RB131	EA005-P: pH Value	----	0.01	pH Unit	6.04	6.28	3.90	0% - 20%
EM1811295-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	2.61	2.56	1.93	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1805275)									
EM1811071-013	FB131	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1805277)									
EM1811248-004	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.051	0.048	6.47	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.007	0.006	0.00	No Limit
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit		



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1805277) - continued									
EM1811071-013	FB131	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit		
EG035F: Dissolved Mercury by FIMS (QC Lot: 1805276)									
EM1811071-013	FB131	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1805882)									
EM1811071-013	FB131	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1811206-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1802635)									
EM1811071-013	FB131	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1811149-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	1.78	1.76	1.45	0% - 20%
EK040P: Fluoride by PC Titrator (QC Lot: 1805198)									
EM1811071-014	RB131	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1811295-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.3	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1805147)									
EM1811297-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1811297-005	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1805147)									
EM1811297-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EM1811297-005	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1805147) - continued									
EM1811297-005	Anonymous	EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1805147)									
EM1811297-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1811297-005	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1805147)									
EM1811297-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1811297-005	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1805148)									
EM1811297-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1811297-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1805148)									
EM1811297-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1811297-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1805148)									
EM1811297-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

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 Work Order : EM1811071
 Client : GHD PTY LTD
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Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1805148) - continued									
EM1811297-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1803392)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	94.2	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	85.0	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	91.7	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	87.0	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	89.9	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	94.4	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	97.4	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	95.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	88.4	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	90.8	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1803391)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	86.7	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1803749)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	87.8	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1805988)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	95.6	80	110
EK040T: Fluoride Total (QCLot: 1803212)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	89.0	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1803197)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	93.3	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1802444)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	87.6	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	96.2	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	95.3	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	94.6	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	93.2	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	93.4	74	114
EP074H: Naphthalene (QCLot: 1802444)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	99.2	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1802444)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	94.1	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	83.2	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1802444) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	86.5	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	89.0	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	87.3	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	78.2	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	90.5	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	85.0	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	86.6	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	86.0	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	92.9	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	95.0	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	94.8	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	90.6	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	89.0	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	91.6	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	93.7	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	89.4	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	94.4	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1803193)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	97.2	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	100	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	94.9	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	94.2	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	94.2	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	94.8	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	94.6	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	86.5	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	98.0	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1803193)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	100	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	95.1	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	98.2	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	93.5	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	86.5	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	24 mg/kg	62.8	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	76.9	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	70.5	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	71.7	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	75.5	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1803193)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	94.4	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	98.3	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	91.6	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	95.5	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	99.6	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	98.9	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	102	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	101	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	106	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	107	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	106	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	102	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	104	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	104	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	104	55	137
EP075I: Organochlorine Pesticides (QCLot: 1803193)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	100	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	97.0	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	105	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	103	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	105	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	93.6	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	98.2	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	99.3	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	99.8	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	99.7	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	106	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	102	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	103	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	81.3	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	75.5	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	105	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	106	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	104	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	96.4	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	96.8	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1802444)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	93.8	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1805275)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	91.0	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1805277)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.2	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.0	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.5	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	89.7	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	95.2	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.4	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.7	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	93.4	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.9	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1805276)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.9	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1805882)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1802635)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	95.1	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1805198)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	111	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1803208)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	75.9	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1805147)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1805147) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	99.6	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1805147)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	76.0	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	74.7	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	117	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	90.8	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	95.8	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	84.8	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	81.8	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	99.7	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	92.4	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	101	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	88.9	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	100	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	90.6	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	113	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1805147)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	99.2	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	103	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	104	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	102	62	119
EP074G: Trihalomethanes (QCLot: 1805147)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	96.7	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1803209)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	88.4	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	85.0	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	89.9	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	91.1	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	94.9	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	113	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	95.6	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	92.9	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	92.8	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	92.4	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	97.8	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	96.4	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	97.3	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1803209) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	92.4	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	90.7	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	92.4	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1803205)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	80.7	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	70.0	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	95.5	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	68.3	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	103	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	80.0	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	90.4	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	108	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	71.0	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1803205)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	29.1	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	62.7	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	56.2	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	68.9	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	71.1	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	120 µg/L	99.6	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	38.7	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	99.3	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	96.8	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	94.9	32	135
EP075I: Organochlorine Pesticides (QCLot: 1803205)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	107	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	112	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	114	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	114	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	115	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	104	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	124	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	100	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	97.6	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1803210)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	97.7	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	99.2	60	133



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1803749) - continued							
EM1811071-003	NEL-EF-BH003_1.0m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	72.5	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1805988)							
EM1811071-003	NEL-EF-BH003_1.0m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	91.4	77	113
EK040T: Fluoride Total (QCLot: 1803212)							
EM1811071-003	NEL-EF-BH003_1.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	97.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1803197)							
EM1811071-008	NEL-EF-BH006_1.5m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	77.4	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1802444)							
EM1811071-003	NEL-EF-BH003_1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	99.8	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	106	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1802444)							
EM1811071-003	NEL-EF-BH003_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	90.9	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	93.2	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	116	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1803193)							
EM1811071-003	NEL-EF-BH003_1.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	96.0	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	98.2	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	52.7	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1803193)							
EM1811071-003	NEL-EF-BH003_1.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	83.9	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	59.4	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1803193)							
EM1811071-003	NEL-EF-BH003_1.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	85.6	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	104	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1802444)							
EM1811071-003	NEL-EF-BH003_1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	80.8	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1803196)							
EM1811071-006	NEL-EF-BH006_0.5m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	96.6	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	101	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	97.0	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1802444)							
EM1811071-003	NEL-EF-BH003_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	82.4	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1803196)							
EM1811071-006	NEL-EF-BH006_0.5m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	96.9	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	100	67	121

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 Work Order : EM1811071
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1803196) - continued							
EM1811071-006	NEL-EF-BH006_0.5m	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	94.3	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1805277)							
EM1811071-013	FB131	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	101	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	100	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	97.3	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	97.0	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	101	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	102	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1805276)							
EM1811071-014	RB131	EG035F: Mercury	7439-97-6	0.01 mg/L	95.8	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1805882)							
EM1811071-014	RB131	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	92.6	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1802635)							
EM1811071-014	RB131	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	94.0	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1805198)							
EM1811072-008	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	115	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1805147)							
EM1811297-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	80.8	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	82.8	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1805147)							
EM1811297-002	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	92.5	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1805148)							
EM1811297-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	77.9	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1805148)							
EM1811297-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	73.5	44	122
EP080: BTEXN (QCLot: 1805148)							
EM1811297-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	94.3	68	130
		EP080: Toluene	108-88-3	20 µg/L	94.2	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1811071	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 11-Jul-2018
Site	: ----	Issue Date	: 19-Jul-2018
Sampler	: KH	No. of samples received	: 15
Order number	:	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075S: Acid Extractable Surrogates (Waste Classifica	EM1811071-013	FB131	2.4.6-Tribromophenol	118-79-6	38.3 %	52-140 %	Recovery less than lower data quality objective
EP075S: Acid Extractable Surrogates (Waste Classifica	EM1811071-014	RB131	2.4.6-Tribromophenol	118-79-6	42.8 %	52-140 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
FB131,	RB131	----	----	----	17-Jul-2018	09-Jul-2018	8

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	17	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	13	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	17	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)		09-Jul-2018	16-Jul-2018	16-Jul-2018	✓	16-Jul-2018	16-Jul-2018	✓
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		09-Jul-2018	----	----	----	16-Jul-2018	23-Jul-2018	✓
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)		09-Jul-2018	16-Jul-2018	05-Jan-2019	✓	16-Jul-2018	05-Jan-2019	✓
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)		09-Jul-2018	16-Jul-2018	06-Aug-2018	✓	18-Jul-2018	06-Aug-2018	✓
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)		09-Jul-2018	16-Jul-2018	06-Aug-2018	✓	17-Jul-2018	23-Jul-2018	✓
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)		09-Jul-2018	17-Jul-2018	23-Jul-2018	✓	18-Jul-2018	31-Jul-2018	✓
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)		09-Jul-2018	16-Jul-2018	06-Aug-2018	✓	19-Jul-2018	06-Aug-2018	✓
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)		09-Jul-2018	16-Jul-2018	23-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,	09-Jul-2018	16-Jul-2018	16-Jul-2018	✓	16-Jul-2018	16-Jul-2018	✓
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,	09-Jul-2018	16-Jul-2018	16-Jul-2018	✓	16-Jul-2018	16-Jul-2018	✓
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,	09-Jul-2018	16-Jul-2018	16-Jul-2018	✓	16-Jul-2018	16-Jul-2018	✓
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,	09-Jul-2018	16-Jul-2018	23-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,	09-Jul-2018	16-Jul-2018	23-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,	09-Jul-2018	16-Jul-2018	23-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,	09-Jul-2018	16-Jul-2018	23-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)		09-Jul-2018	16-Jul-2018	16-Jul-2018	✔	16-Jul-2018	16-Jul-2018	✔
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
Soil Glass Jar - Unpreserved (EP071-EM)		09-Jul-2018	16-Jul-2018	23-Jul-2018	✔	17-Jul-2018	25-Aug-2018	✔
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)		09-Jul-2018	16-Jul-2018	16-Jul-2018	✔	16-Jul-2018	16-Jul-2018	✔
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							
Soil Glass Jar - Unpreserved (EP071-EM)		09-Jul-2018	16-Jul-2018	23-Jul-2018	✔	17-Jul-2018	25-Aug-2018	✔
NEL-EF-BH003_0.5m,	NEL-EF-BH003_1.0m,							
NEL-EF-BH006_0.5m,	NEL-EF-BH006_1.5m,							
NEL-EF-BH014_0.5m,	NEL-EF-BH014_1.0m							

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	RB131	09-Jul-2018	----	----	----	17-Jul-2018	09-Jul-2018	✘
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)	RB131	09-Jul-2018	----	----	----	17-Jul-2018	05-Jan-2019	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)	RB131	09-Jul-2018	----	----	----	19-Jul-2018	23-Jul-2018	✔
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	RB131	09-Jul-2018	----	----	----	17-Jul-2018	06-Aug-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF)	RB131	09-Jul-2018	----	----	----	16-Jul-2018	23-Jul-2018	✔
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	RB131	09-Jul-2018	----	----	----	17-Jul-2018	06-Aug-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066) FB131, RB131	09-Jul-2018	16-Jul-2018	16-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074) FB131, RB131	09-Jul-2018	17-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) FB131, RB131	09-Jul-2018	17-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) FB131, RB131	09-Jul-2018	17-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074) FB131, RB131	09-Jul-2018	17-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB131, RB131	09-Jul-2018	16-Jul-2018	16-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) FB131, RB131	09-Jul-2018	16-Jul-2018	16-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) FB131, RB131	09-Jul-2018	16-Jul-2018	16-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075-EM) FB131, RB131	09-Jul-2018	16-Jul-2018	16-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) FB131, RB131	09-Jul-2018	16-Jul-2018	16-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB131, TB131, RB131	09-Jul-2018	17-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) FB131, RB131	09-Jul-2018	16-Jul-2018	16-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB131, TB131, RB131	09-Jul-2018	17-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
FB131, RB131, TB131	09-Jul-2018	17-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **✖** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	4	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	13	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	17	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	13	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	17	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1811072**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **LH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **10**
No. of samples analysed : **8**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 11-Jul-2018 12:50
Date Analysis Commenced : 16-Jul-2018
Issue Date : 19-Jul-2018 12:26



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH079_0.5m	NEL-BH079_1.0m	NEL-BH184_0.2m	NEL-BH195_0.5m	NEL-BH195_1.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811072-002	EM1811072-003	EM1811072-004	EM1811072-006	EM1811072-007
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		5.1	5.8	6.8	7.0	7.5
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		29.4	23.8	7.3	18.7	10.0
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		5	<5	<5	9	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		14	17	29	26	30
Lead	7439-92-1	5	mg/kg		12	15	9	52	28
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		33	57	67	24	19
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		22	64	42	104	101
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		560	540	250	390	420
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH079_0.5m	NEL-BH079_1.0m	NEL-BH184_0.2m	NEL-BH195_0.5m	NEL-BH195_1.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811072-002	EM1811072-003	EM1811072-004	EM1811072-006	EM1811072-007
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH079_0.5m	NEL-BH079_1.0m	NEL-BH184_0.2m	NEL-BH195_0.5m	NEL-BH195_1.0m
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811072-002	EM1811072-003	EM1811072-004	EM1811072-006	EM1811072-007
				Result	Result	Result	Result	Result

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.3
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.6
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.7
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.6
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.7
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.1
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.6
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	0.8
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	8.4
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	1.4
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	1.7
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.9

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH079_0.5m	NEL-BH079_1.0m	NEL-BH184_0.2m	NEL-BH195_0.5m	NEL-BH195_1.0m
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811072-002	EM1811072-003	EM1811072-004	EM1811072-006	EM1811072-007
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH079_0.5m	NEL-BH079_1.0m	NEL-BH184_0.2m	NEL-BH195_0.5m	NEL-BH195_1.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811072-002	EM1811072-003	EM1811072-004	EM1811072-006	EM1811072-007
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	140
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	140
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		85.9	102	89.9	88.8	89.2
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		62.4	65.0	72.5	66.0	71.2
Toluene-D8	2037-26-5	0.1	%		61.0	64.7	77.1	69.1	72.4
4-Bromofluorobenzene	460-00-4	0.1	%		69.8	72.4	81.3	73.9	76.5
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		108	114	90.4	91.2	97.6
2-Chlorophenol-D4	93951-73-6	0.025	%		82.2	85.6	72.1	75.3	82.8
2,4,6-Tribromophenol	118-79-6	0.025	%		81.4	77.4	78.9	85.0	91.8
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		91.7	98.1	85.8	87.4	92.3
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		83.8	89.4	83.4	84.0	90.7
2-Fluorobiphenyl	321-60-8	0.025	%		94.4	98.0	91.5	91.5	97.8
Anthracene-d10	1719-06-8	0.025	%		101	104	98.3	97.7	102
4-Terphenyl-d14	1718-51-0	0.025	%		86.3	85.9	85.0	82.7	84.8



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB132	FB132	TB132	----	----
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1811072-008	EM1811072-009	EM1811072-010	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.09	6.11	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB132	FB132	TB132	----	----
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1811072-008	EM1811072-009	EM1811072-010	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2,4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB132	FB132	TB132	----	----
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1811072-008	EM1811072-009	EM1811072-010	-----	-----
					Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,6-Dichlorophenol	87-65-0	2	µg/L		<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L		<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L		<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L		<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L		<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L		<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L		<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	4	µg/L		<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L		<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L		<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L		<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L		<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L		<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L		<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L		<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L		<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L		<50	<50	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L		<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB132	FB132	TB132	----	----
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1811072-008	EM1811072-009	EM1811072-010	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		96.6	87.6	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		95.2	97.5	----	----	----
Toluene-D8	2037-26-5	5	%		96.2	100	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		99.6	99.1	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		32.6	26.7	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		78.8	66.3	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		83.4	56.0	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		93.1	82.2	----	----	----
Anthracene-d10	1719-06-8	1.0	%		92.0	81.0	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		105	96.0	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB132	FB132	TB132	----	----
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1811072-008	EM1811072-009	EM1811072-010	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		45.6	48.4	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		100	107	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		85.1	90.1	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		99.5	107	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		100.0	108	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		106	110	----	----	----
Anthracene-d10	1719-06-8	0.25	%		114	117	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		131	127	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		95.1	97.6	98.1	----	----
Toluene-D8	2037-26-5	2	%		89.4	93.3	96.1	----	----
4-Bromofluorobenzene	460-00-4	2	%		98.6	99.6	100	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		<i>Recovery Limits (%)</i>	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Friday, 13 July 2018 3:48 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: On Hold - EM1811071 - GHD SER (31350060910)
Attachments: 11072018181939-0001.pdf; 11072018182148-0001.pdf

Hi Shirley, sorry for the delay on these samples, just getting around to my emails.

Please analyse the following at standard TAT:

EM1811071:

NEL-EF-BH003_0.5m = IWRG621
NEL-EF-BH003_1.0m = IWRG621

NEL-EF-BH006_0.5m = IWRG621
NEL-EF-BH006_1.5m = IWRG621

NEL-EF-BH014_0.5m = IWRG621
NEL-EF-BH014_1.0m = IWRG621

FB131 = IWRG621 water equivalent
RB131 = IWRG621 water equivalent
TB131 = Volatile TPH/BTEX

EM1811072:

2 NEL-BH079_0.5m = IWRG621
3 NEL-BH079_1.0m = IWRG621

4 NEL-BH184_0.2m = IWRG621

6 NEL-BH195_0.5m = IWRG621
7 NEL-BH195_1.0m = IWRG621

8 RB132 = IWRG621 water equivalent
9 FB132 = IWRG621 water equivalent
10 TB132 = Volatile TPH/BTEX

Regards,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Thursday, 12 July 2018 7:39 AM

QUALITY CONTROL REPORT

Work Order	: EM1811072	Page	: 1 of 21
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 11-Jul-2018
Order number	: ----	Date Analysis Commenced	: 16-Jul-2018
C-O-C number	: ----	Issue Date	: 19-Jul-2018
Sampler	: LH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 10		
No. of samples analysed	: 8		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1802147)									
EM1811072-002	NEL-BH079_0.5m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	5.1	5.1	0.00	0% - 20%
EM1811150-048	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.8	6.8	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1802319)									
EM1811072-002	NEL-BH079_0.5m	EA055: Moisture Content	----	0.1	%	29.4	28.7	2.45	0% - 20%
EM1811246-005	Anonymous	EA055: Moisture Content	----	0.1	%	14.4	13.7	4.30	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1802697)									
EM1811072-002	NEL-BH079_0.5m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	33	33	0.00	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	14	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	12	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	22	22	0.00	No Limit
EM1811255-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	14	13	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	14	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1802697) - continued									
EM1811255-005	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	19	19	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1802696)									
EM1811072-002	NEL-BH079_0.5m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811255-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1802753)									
EM1811072-002	NEL-BH079_0.5m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811254-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1803070)									
EM1810982-004	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1811176-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1802220)									
EM1811072-002	NEL-BH079_0.5m	EK040T: Fluoride	16984-48-8	40	mg/kg	560	480	13.8	0% - 50%
EM1811254-003	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	250	270	5.40	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1802201)									
EM1811072-002	NEL-BH079_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811254-006	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1802104)									
EM1811072-002	NEL-BH079_0.5m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811254-004	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1802104)									
EM1811072-002	NEL-BH079_0.5m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1811254-004	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1802104)									
EM1811072-002	NEL-BH079_0.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1802104) - continued									
EM1811072-002	NEL-BH079_0.5m	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1811254-004	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1802199)							
EM1811072-002	NEL-BH079_0.5m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1802199) - continued									
EM1811072-002	NEL-BH079_0.5m	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1811254-006	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1802199)									
EM1811072-002	NEL-BH079_0.5m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1811254-006	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EM1811254-006	Anonymous	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1802199)									
EM1811072-002	NEL-BH079_0.5m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1802199) - continued									
EM1811072-002	NEL-BH079_0.5m	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811254-006	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	0.9	1.0	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1802199)									
EM1811072-002	NEL-BH079_0.5m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1802199) - continued									
EM1811072-002	NEL-BH079_0.5m	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1811254-006	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1802104)							
EM1811072-002	NEL-BH079_0.5m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1811254-004	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1802200)									
EM1811072-002	NEL-BH079_0.5m	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1811254-006	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

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 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1802200) - continued									
EM1811254-006	Anonymous	EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1802104)									
EM1811072-002	NEL-BH079_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1811254-004	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1802200)									
EM1811072-002	NEL-BH079_0.5m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1811254-006	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1805197)									
EM1811071-014	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.04	6.28	3.90	0% - 20%
EM1811295-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	2.61	2.56	1.93	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1803167)									
EM1811072-008	RB132	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1803169)									
EM1811269-008	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.010	0.010	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1811072-008	RB132	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 1803168)									
EM1811283-008	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1811072-008	RB132	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1805882)									
EM1811071-013	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1811206-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1802635)									
EM1811071-013	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1811149-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	1.78	1.76	1.45	0% - 20%
EK040P: Fluoride by PC Titrator (QC Lot: 1805198)									
EM1811071-014	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1811295-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.3	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1802115)									
EM1811242-004	Anonymous	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1803037)									
EM1811072-008	RB132	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1803037)									
EM1811072-008	RB132	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1803037)									
EM1811072-008	RB132	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1803037)									
EM1811072-008	RB132	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1802116)									



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1802116) - continued									
EM1811242-004	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	0.00	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.00	No Limit
EM1811214-003	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	0.00	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1802117)									
EM1811214-003	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1803038)									
EM1811072-008	RB132	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit

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 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1802117)									
EM1811214-003	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1803038)									
EM1811072-008	RB132	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1803038)									
EM1811072-008	RB132	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1802697)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.1	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	87.3	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	91.6	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	86.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	92.0	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	94.4	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.2	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	80.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	93.2	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	94.3	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1802696)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.7	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1802753)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	84.6	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1803070)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	97.2	80	110
EK040T: Fluoride Total (QCLot: 1802220)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	105	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1802201)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	116	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1802104)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	89.2	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	90.7	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	94.0	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	92.2	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	95.2	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	93.4	74	114
EP074H: Naphthalene (QCLot: 1802104)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	103	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1802104)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	101	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	83.5	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1802104) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	88.3	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.2	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	85.6	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	84.1	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	90.7	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	83.3	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	89.5	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	83.2	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	91.7	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	90.5	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	96.4	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	94.5	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	89.0	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.8	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	91.5	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	91.7	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	92.0	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1802199)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	89.3	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	94.7	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	85.7	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	94.2	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	91.1	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	90.0	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	78.4	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	82.2	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	85.9	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1802199)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	91.9	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	87.8	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	92.2	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	89.8	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	90.1	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	124	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	102	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	93.6	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	89.0	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	117	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1802199)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	90.7	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	88.2	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	93.0	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	85.3	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	87.9	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	90.6	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	84.3	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	85.9	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	77.0	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	77.3	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	89.4	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	86.5	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	92.2	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	91.3	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	97.6	55	137
EP075I: Organochlorine Pesticides (QCLot: 1802199)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	82.3	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	82.6	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	82.1	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	80.3	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	85.1	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	89.8	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	81.9	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	77.9	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	75.7	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	76.7	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	75.8	63	136
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	82.8	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	77.2	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	61.3	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	57.6	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	76.7	66	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	76.9	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	76.4	63	139
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	81.4	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	90.5	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1802104)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	92.8	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1803167)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	108	84	116
EG020F: Dissolved Metals by ICP-MS (QCLot: 1803169)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.4	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.5	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.5	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	99.1	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.9	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.1	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	99.6	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.8	85	109
EG035F: Dissolved Mercury by FIMS (QCLot: 1803168)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	100	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1805882)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1802635)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	95.1	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1805198)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	111	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1802115)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	87.5	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1803037)								



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit						
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1803037) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	99.8	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1803037)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	85.9	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	89.3	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	108	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	93.4	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	92.5	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	85.7	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	85.6	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	96.6	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	89.7	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	103	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	91.8	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	93.0	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	106	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	85.1	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1803037)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	99.9	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	91.8	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	97.2	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	86.3	62	119
EP074G: Trihalomethanes (QCLot: 1803037)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	93.4	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1802116)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	95.8	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	94.5	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	96.3	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	98.7	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	90.0	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	99.0	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	93.4	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	90.8	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	92.4	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	88.8	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	104	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	100	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	104	56	126



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1802116) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	99.1	53	123
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	98.1	53	125
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	99.0	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1802120)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	85.3	44	114
EP075-EM: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	73.1	53	121
EP075-EM: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	101	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	71.4	57	116
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	106	51	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	84.0	56	120
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	97.5	41	125
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	114	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	77.1	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1802120)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	31.1	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	65.7	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	58.5	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	72.6	53	123
EP075-EM: 2.4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	73.0	52	128
EP075-EM: 2.4-Dinitrophenol	51-28-5	100	µg/L	<100	120 µg/L	105	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	40.7	13	60
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	109	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	105	55	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	115	32	135
EP075I: Organochlorine Pesticides (QCLot: 1802120)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	112	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	120	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	122	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	122	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	122	60	132
EP075-EM: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	110	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	104	59	130
EP075-EM: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	107	62	136
EP075-EM: 4.4`-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	106	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1802117)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	106	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	108	60	133



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1802753) - continued							
EM1811072-003	NEL-BH079_1.0m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	71.3	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1803070)							
EM1810982-034	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	101	77	113
EK040T: Fluoride Total (QCLot: 1802220)							
EM1811072-003	NEL-BH079_1.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	76.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1802201)							
EM1811072-006	NEL-BH195_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	115	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1802104)							
EM1811072-003	NEL-BH079_1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	76.0	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	80.7	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1802104)							
EM1811072-003	NEL-BH079_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	66.7	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	70.1	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	87.3	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1802199)							
EM1811072-003	NEL-BH079_1.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	86.9	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	63.7	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	41.5	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1802199)							
EM1811072-003	NEL-BH079_1.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	74.0	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	64.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1802199)							
EM1811072-003	NEL-BH079_1.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	86.6	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	80.7	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1802104)							
EM1811072-003	NEL-BH079_1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	69.8	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1802200)							
EM1811072-004	NEL-BH184_0.2m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	93.5	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	101	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	90.7	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1802104)							
EM1811072-003	NEL-BH079_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	72.0	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1802200)							
EM1811072-004	NEL-BH184_0.2m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	93.2	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	95.4	67	121

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1802200) - continued							
EM1811072-004	NEL-BH184_0.2m	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	83.0	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1803169)							
EM1811072-008	RB132	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	93.2	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	99.3	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	89.2	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	90.4	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	90.0	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	94.7	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1803168)							
EM1811072-009	FB132	EG035F: Mercury	7439-97-6	0.01 mg/L	90.6	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1805882)							
EM1811071-014	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	92.6	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1802635)							
EM1811071-014	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	94.0	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1805198)							
EM1811072-008	RB132	EK040P: Fluoride	16984-48-8	5 mg/L	115	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1802115)							
EM1811234-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	10 µg/L	84.0	47	137
EP074E: Halogenated Aliphatic Compounds (QCLot: 1803037)							
EM1811254-034	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	106	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	87.6	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1803037)							
EM1811254-034	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	103	68	132
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1802116)							
EM1811214-003	Anonymous	EP075(SIM): Acenaphthene	83-32-9	5 µg/L	69.3	42	122
		EP075(SIM): Pyrene	129-00-0	5 µg/L	87.4	40	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1803038)							
EM1811254-034	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	83.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1803038)							
EM1811254-034	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	80.8	44	122
EP080: BTEXN (QCLot: 1803038)							



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 1803038) - continued							
EM1811254-034	Anonymous	EP080: Benzene	71-43-2	20 µg/L	104	68	130
		EP080: Toluene	108-88-3	20 µg/L	106	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1811072	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 11-Jul-2018
Site	: ----	Issue Date	: 19-Jul-2018
Sampler	: LH	No. of samples received	: 10
Order number	:	No. of samples analysed	: 8

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RB132, FB132	----	----	----	17-Jul-2018	10-Jul-2018	7

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	10	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	17-Jul-2018	✔	16-Jul-2018	16-Jul-2018	✔
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	----	----	----	16-Jul-2018	24-Jul-2018	✔



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	06-Jan-2019	✓	16-Jul-2018	06-Jan-2019	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	07-Aug-2018	✓	18-Jul-2018	07-Aug-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	07-Aug-2018	✓	16-Jul-2018	23-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	17-Jul-2018	30-Jul-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	07-Aug-2018	✓	17-Jul-2018	07-Aug-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	16-Jul-2018	25-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	16-Jul-2018	17-Jul-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	16-Jul-2018	17-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	16-Jul-2018	17-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	16-Jul-2018	25-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	16-Jul-2018	25-Aug-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	16-Jul-2018	25-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	16-Jul-2018	25-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	16-Jul-2018	17-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH079_0.5m, NEL-BH184_0.2m, NEL-BH195_1.0m	NEL-BH079_1.0m, NEL-BH195_0.5m,	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	16-Jul-2018	17-Jul-2018	✓

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Bottle - Natural (EA005-P)								
RB132,	FB132	10-Jul-2018	----	----	----	17-Jul-2018	10-Jul-2018	✖



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)								
RB132,	FB132	10-Jul-2018	----	----	----	17-Jul-2018	06-Jan-2019	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)								
RB132,	FB132	10-Jul-2018	----	----	----	18-Jul-2018	24-Jul-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)								
RB132,	FB132	10-Jul-2018	----	----	----	17-Jul-2018	07-Aug-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF)								
RB132,	FB132	10-Jul-2018	----	----	----	16-Jul-2018	24-Jul-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)								
RB132,	FB132	10-Jul-2018	----	----	----	17-Jul-2018	07-Aug-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)								
RB132,	FB132	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)								
RB132,	FB132	10-Jul-2018	17-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
RB132,	FB132	10-Jul-2018	17-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)								
RB132,	FB132	10-Jul-2018	17-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)								
RB132,	FB132	10-Jul-2018	17-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
RB132,	FB132	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)								
RB132,	FB132	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)								
RB132,	FB132	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB132,	FB132	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB132,	FB132	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB132, TB132	FB132,	10-Jul-2018	17-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB132,	FB132	10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB132, TB132	FB132,	10-Jul-2018	17-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RB132, TB132	FB132,	10-Jul-2018	17-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	10	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	10	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1811150**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **KA**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **71**
No. of samples analysed : **48**

Page : 1 of 56
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 12-Jul-2018 10:10
Date Analysis Commenced : 13-Jul-2018
Issue Date : 20-Jul-2018 15:22



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Team Leader - Asbestos	Melbourne Asbestos, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
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General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EP074-UT: Particular samples (EM181150_017, 029) show minor Tetrachloroethene hit. Confirmed by re-analysis.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB01_0.5m	NEL-LFB01_1.0m	NEL-LFB01_3.0m	NEL-LFB01_4.0m	NEL-LFB02_0.5m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-002	EM1811150-003	EM1811150-004	EM1811150-005	EM1811150-008
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		----	7.1	5.8	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.9	17.8	16.7	15.5	17.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		Yes	No*	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	----	----	----
Asbestos Type	1332-21-4	-	--		Ch+Am	Ch	----	----	----
Sample weight (dry)	----	0.01	g		364	494	----	----	----
APPROVED IDENTIFIER:	----	-	--		E.DAOS	E.DAOS	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		32	12	9	11	19
Lead	7439-92-1	5	mg/kg		84	15	11	8	20
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		24	41	14	17	34
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		188	28	24	33	57
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		----	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		----	290	300	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB01_0.5m	NEL-LFB01_1.0m	NEL-LFB01_3.0m	NEL-LFB01_4.0m	NEL-LFB02_0.5m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-002	EM1811150-003	EM1811150-004	EM1811150-005	EM1811150-008
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg		----	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		----	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	<0.5	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		----	<1	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		----	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		----	<0.01	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg		----	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		----	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		----	<0.01	<0.01	----	----
Chloroform	67-66-3	0.02	mg/kg		----	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		----	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		----	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		----	<0.02	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg		----	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		----	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		----	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		----	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		----	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		----	<0.02	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		----	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		----	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		----	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		----	<0.01	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		----	<0.01	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		----	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		----	<0.03	<0.03	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		----	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		----	<0.03	<0.03	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB01_0.5m	NEL-LFB01_1.0m	NEL-LFB01_3.0m	NEL-LFB01_4.0m	NEL-LFB02_0.5m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-002	EM1811150-003	EM1811150-004	EM1811150-005	EM1811150-008
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	----	<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	----	<0.2	<0.2	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	----	<1	<1	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg	----	<1	<1	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	<1	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg	----	<1	<1	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	----	<1	<1	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	----	<5	<5	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg	----	<5	<5	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	----	<5	<5	<5	----	----
Dinoseb	88-85-7	5	mg/kg	----	<5	<5	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	----	<5	<5	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----
Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB01_0.5m	NEL-LFB01_1.0m	NEL-LFB01_3.0m	NEL-LFB01_4.0m	NEL-LFB02_0.5m
Client sampling date / time				11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-002	EM1811150-003	EM1811150-004	EM1811150-005	EM1811150-008
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	1.2	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	----	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	----	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	----	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	----	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	----	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	----	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	----	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	----	<0.03	<0.03	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	----	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	----	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	----	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	----	<0.03	<0.03	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	----	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	<0.03	<0.03	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	----	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	----	<0.03	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	<0.03	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	<0.03	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	----	<0.05	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg	----	<0.03	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB01_0.5m	NEL-LFB01_1.0m	NEL-LFB01_3.0m	NEL-LFB01_4.0m	NEL-LFB02_0.5m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-002	EM1811150-003	EM1811150-004	EM1811150-005	EM1811150-008
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg	----	<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	74.9	73.8	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	71.7	81.9	----	----	----
Toluene-D8	2037-26-5	0.1	%	----	69.5	83.2	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	77.8	82.0	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%	----	106	111	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%	----	85.0	85.0	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%	----	147	97.8	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%	----	102	104	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	----	93.0	100	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%	----	104	102	----	----	----
Anthracene-d10	1719-06-8	0.025	%	----	102	101	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%	----	104	107	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB02_1.0m	NEL-LFB02_2.0m	NEL-LFB02_3.0m	NEL-LFB03_0.5m	NEL-LFB03_1.0m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-009	EM1811150-010	EM1811150-011	EM1811150-015	EM1811150-016
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	----	7.4	6.4	----	----	7.2
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	12.1	7.4	14.2	14.4	13.7	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	----	----	No	
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	----	----	No	
Asbestos Type	1332-21-4	-	--	-	-	----	----	-	
Sample weight (dry)	----	0.01	g	374	269	----	----	223	
APPROVED IDENTIFIER:	----	-	--	E.DAOS	E.DAOS	----	----	E.DAOS	
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	10	6	9	5	
Cadmium	7440-43-9	1	mg/kg	<1	2	<1	<1	<1	
Copper	7440-50-8	5	mg/kg	10	44	13	14	14	
Lead	7439-92-1	5	mg/kg	14	238	12	27	48	
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2	
Nickel	7440-02-0	2	mg/kg	15	27	20	26	21	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2	
Tin	7440-31-5	5	mg/kg	<5	56	<5	<5	<5	
Zinc	7440-66-6	5	mg/kg	34	2490	45	35	504	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	<0.5	<0.5	----	<0.5	
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	----	<1	<1	----	<1	
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	----	390	400	----	380	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	<0.1	----	<0.1	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	----	<0.2	
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	----	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	----	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB02_1.0m	NEL-LFB02_2.0m	NEL-LFB02_3.0m	NEL-LFB03_0.5m	NEL-LFB03_1.0m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-009	EM1811150-010	EM1811150-011	EM1811150-015	EM1811150-016
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
meta- & para-Xylene	108-38-3	106-42-3	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
Styrene	100-42-5		0.5	mg/kg	----	<0.5	<0.5	----	<0.5
ortho-Xylene	95-47-6		0.5	mg/kg	----	<0.5	<0.5	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----		0.2	mg/kg	----	<0.2	<0.2	----	<0.2
^ Total Xylenes	----		0.5	mg/kg	----	<0.5	<0.5	----	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3		1	mg/kg	----	<1	<1	----	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,1-Dichloroethene	75-35-4		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
Methylene chloride	75-09-2		0.4	mg/kg	----	<0.4	<0.4	----	<0.4
trans-1,2-Dichloroethene	156-60-5		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
cis-1,2-Dichloroethene	156-59-2		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
Chloroform	67-66-3		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,1,1-Trichloroethane	71-55-6		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
Carbon Tetrachloride	56-23-5		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
1,2-Dichloroethane	107-06-2		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Trichloroethene	79-01-6		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,1,2-Trichloroethane	79-00-5		0.04	mg/kg	----	<0.04	<0.04	----	<0.04
Tetrachloroethene	127-18-4		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,1,1,2-Tetrachloroethane	630-20-6		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
1,1,2,2-Tetrachloroethane	79-34-5		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Hexachlorobutadiene	87-68-3		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Chlorobenzene	108-90-7		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,4-Dichlorobenzene	106-46-7		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,2-Dichlorobenzene	95-50-1		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,2,4-Trichlorobenzene	120-82-1		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
^ Sum of other chlorinated hydrocarbons	----		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8		0.03	mg/kg	----	<0.03	<0.03	----	<0.03
2,4-Dichlorophenol	120-83-2		0.03	mg/kg	----	<0.03	<0.03	----	<0.03
2,6-Dichlorophenol	87-65-0		0.03	mg/kg	----	<0.03	<0.03	----	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB02_1.0m	NEL-LFB02_2.0m	NEL-LFB02_3.0m	NEL-LFB03_0.5m	NEL-LFB03_1.0m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-009	EM1811150-010	EM1811150-011	EM1811150-015	EM1811150-016
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	----	<0.03	<0.03	<0.03	----	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	<0.03	<0.03	<0.03	----	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg	----	<0.2	<0.2	<0.2	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	<0.03	<0.03	<0.03	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	----	<1	<1	<1	----	<1
2-Methylphenol	95-48-7	1	mg/kg	----	<1	<1	<1	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	<1	<1	----	<1
2-Nitrophenol	88-75-5	1	mg/kg	----	<1	<1	<1	----	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	----	<1	<1	<1	----	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	----	<5	<5	<5	----	<5
4-Nitrophenol	100-02-7	5	mg/kg	----	<5	<5	<5	----	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	----	<5	<5	<5	----	<5
Dinoseb	88-85-7	5	mg/kg	----	<5	<5	<5	----	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	----	<5	<5	<5	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	<1	<1	<1	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB02_1.0m	NEL-LFB02_2.0m	NEL-LFB02_3.0m	NEL-LFB03_0.5m	NEL-LFB03_1.0m
Client sampling date / time				11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-009	EM1811150-010	EM1811150-011	EM1811150-015	EM1811150-016
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	0.6	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	1.2	----	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Aldrin	309-00-2	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Endrin	72-20-8	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	----	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB02_1.0m	NEL-LFB02_2.0m	NEL-LFB02_3.0m	NEL-LFB03_0.5m	NEL-LFB03_1.0m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-009	EM1811150-010	EM1811150-011	EM1811150-015	EM1811150-016
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	<10	----	<10
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	<100	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg	----	<50	<50	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	<100	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	<50	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	<10	----	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	71.1	76.8	----	----	74.2
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	87.4	68.5	----	----	89.8
Toluene-D8	2037-26-5	0.1	%	----	101	66.3	----	----	103
4-Bromofluorobenzene	460-00-4	0.1	%	----	74.2	85.1	----	----	77.8
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%	----	109	110	----	----	107
2-Chlorophenol-D4	93951-73-6	0.025	%	----	87.3	82.7	----	----	81.1
2,4,6-Tribromophenol	118-79-6	0.025	%	----	107	75.4	----	----	88.1
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%	----	77.1	77.1	----	----	103
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	----	77.8	80.4	----	----	95.8
2-Fluorobiphenyl	321-60-8	0.025	%	----	102	75.0	----	----	98.5
Anthracene-d10	1719-06-8	0.025	%	----	104	90.7	----	----	96.0
4-Terphenyl-d14	1718-51-0	0.025	%	----	103	86.4	----	----	116



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB03_2.0m	NEL-LFB03_3.0m	NEL-LFB04_0.5m	NEL-LFB04_2.0m	NEL-LFB04_3.0m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-017	EM1811150-018	EM1811150-022	EM1811150-023	EM1811150-024
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.5	----	7.2	5.9	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		16.2	14.7	16.2	15.4	15.9
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	No	No	----
Asbestos (Trace)	1332-21-4	5	Fibres		No	----	No	No	----
Asbestos Type	1332-21-4	-	--		-	----	-	-	----
Sample weight (dry)	----	0.01	g		254	----	116	273	----
APPROVED IDENTIFIER:	----	-	--		E.DAOS	----	E.DAOS	E.DAOS	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		59	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		24	14	10	11	12
Lead	7439-92-1	5	mg/kg		82	10	50	12	12
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		34	17	16	16	17
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		64	24	51	26	32
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		340	----	320	430	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB03_2.0m	NEL-LFB03_3.0m	NEL-LFB04_0.5m	NEL-LFB04_2.0m	NEL-LFB04_3.0m
Client sampling date / time				11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-017	EM1811150-018	EM1811150-022	EM1811150-023	EM1811150-024
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
meta- & para-Xylene	108-38-3	106-42-3	0.5	mg/kg	<0.5	----	<0.5	----
Styrene	100-42-5		0.5	mg/kg	<0.5	----	<0.5	----
ortho-Xylene	95-47-6		0.5	mg/kg	<0.5	----	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----		0.2	mg/kg	<0.2	----	<0.2	----
^ Total Xylenes	----		0.5	mg/kg	<0.5	----	<0.5	----
EP074H: Naphthalene								
Naphthalene	91-20-3		1	mg/kg	<1	----	<1	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4		0.02	mg/kg	<0.02	----	<0.02	----
1,1-Dichloroethene	75-35-4		0.01	mg/kg	<0.01	----	<0.01	----
Methylene chloride	75-09-2		0.4	mg/kg	<0.4	----	<0.4	----
trans-1,2-Dichloroethene	156-60-5		0.02	mg/kg	<0.02	----	<0.02	----
cis-1,2-Dichloroethene	156-59-2		0.01	mg/kg	<0.01	----	<0.01	----
Chloroform	67-66-3		0.02	mg/kg	<0.02	----	<0.02	----
1,1,1-Trichloroethane	71-55-6		0.01	mg/kg	<0.01	----	<0.01	----
Carbon Tetrachloride	56-23-5		0.01	mg/kg	<0.01	----	<0.01	----
1,2-Dichloroethane	107-06-2		0.02	mg/kg	<0.02	----	<0.02	----
Trichloroethene	79-01-6		0.02	mg/kg	<0.02	----	<0.02	----
1,1,2-Trichloroethane	79-00-5		0.04	mg/kg	<0.04	----	<0.04	----
Tetrachloroethene	127-18-4		0.02	mg/kg	0.06	----	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6		0.01	mg/kg	<0.01	----	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5		0.02	mg/kg	<0.02	----	<0.02	----
Hexachlorobutadiene	87-68-3		0.02	mg/kg	<0.02	----	<0.02	----
Chlorobenzene	108-90-7		0.02	mg/kg	<0.02	----	<0.02	----
1,4-Dichlorobenzene	106-46-7		0.02	mg/kg	<0.02	----	<0.02	----
1,2-Dichlorobenzene	95-50-1		0.02	mg/kg	<0.02	----	<0.02	----
1,2,4-Trichlorobenzene	120-82-1		0.01	mg/kg	<0.01	----	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----		0.01	mg/kg	0.06	----	<0.01	----
^ Sum of other chlorinated hydrocarbons	----		0.01	mg/kg	0.06	----	<0.01	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8		0.03	mg/kg	<0.03	----	<0.03	----
2,4-Dichlorophenol	120-83-2		0.03	mg/kg	<0.03	----	<0.03	----
2,6-Dichlorophenol	87-65-0		0.03	mg/kg	<0.03	----	<0.03	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB03_2.0m	NEL-LFB03_3.0m	NEL-LFB04_0.5m	NEL-LFB04_2.0m	NEL-LFB04_3.0m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-017	EM1811150-018	EM1811150-022	EM1811150-023	EM1811150-024
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg		<1	----	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	<1	<1	----
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	<1	<1	----
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	<5	<5	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	<5	<5	----
Dinoseb	88-85-7	5	mg/kg		<5	----	<5	<5	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	<1	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB03_2.0m	NEL-LFB03_3.0m	NEL-LFB04_0.5m	NEL-LFB04_2.0m	NEL-LFB04_3.0m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-017	EM1811150-018	EM1811150-022	EM1811150-023	EM1811150-024
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	----	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	----	1.2	1.2	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	<10	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB03_2.0m	NEL-LFB03_3.0m	NEL-LFB04_0.5m	NEL-LFB04_2.0m	NEL-LFB04_3.0m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-017	EM1811150-018	EM1811150-022	EM1811150-023	EM1811150-024
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		190	----	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		190	----	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg		220	----	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		120	----	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		340	----	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		73.5	----	75.2	68.9	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		84.1	----	82.7	82.9	----
Toluene-D8	2037-26-5	0.1	%		87.0	----	84.6	61.6	----
4-Bromofluorobenzene	460-00-4	0.1	%		82.8	----	84.1	69.5	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		100.0	----	81.6	116	----
2-Chlorophenol-D4	93951-73-6	0.025	%		82.4	----	67.2	91.9	----
2,4,6-Tribromophenol	118-79-6	0.025	%		93.6	----	90.2	98.6	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		104	----	102	126	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		99.8	----	96.0	106	----
2-Fluorobiphenyl	321-60-8	0.025	%		101	----	85.8	77.1	----
Anthracene-d10	1719-06-8	0.025	%		99.0	----	95.1	103	----
4-Terphenyl-d14	1718-51-0	0.025	%		97.8	----	91.3	103	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB04_4.0m	NEL-LFB05_0.5m	NEL-LFB05_1.0m	NEL-LFB05_2.0m	NEL-LFB05_3.0m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-025	EM1811150-028	EM1811150-029	EM1811150-030	EM1811150-031
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	----	----	----	6.7	----	6.8
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	16.3	13.8	24.7	15.3	14.5	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	No	----	
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	No	----	
Asbestos Type	1332-21-4	-	--	----	----	-	-	----	
Sample weight (dry)	----	0.01	g	----	----	408	220	----	
APPROVED IDENTIFIER:	----	-	--	----	----	E.DAOS	E.DAOS	----	
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	<5	9	<5	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Copper	7440-50-8	5	mg/kg	11	10	71	13	14	
Lead	7439-92-1	5	mg/kg	9	30	103	12	13	
Molybdenum	7439-98-7	2	mg/kg	<2	<2	3	<2	<2	
Nickel	7440-02-0	2	mg/kg	16	8	38	21	23	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2	
Tin	7440-31-5	5	mg/kg	<5	<5	10	<5	<5	
Zinc	7440-66-6	5	mg/kg	34	33	146	45	40	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	<0.5	
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	----	----	<1	----	<1	
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	----	----	260	----	360	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	<0.1	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	<0.2	
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	<0.5	



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB04_4.0m	NEL-LFB05_0.5m	NEL-LFB05_1.0m	NEL-LFB05_2.0m	NEL-LFB05_3.0m
Client sampling date / time				11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-025	EM1811150-028	EM1811150-029	EM1811150-030	EM1811150-031
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
meta- & para-Xylene	108-38-3	106-42-3	0.5	mg/kg	----	<0.5	----	<0.5
Styrene	100-42-5		0.5	mg/kg	----	<0.5	----	<0.5
ortho-Xylene	95-47-6		0.5	mg/kg	----	<0.5	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----		0.2	mg/kg	----	<0.2	----	<0.2
^ Total Xylenes	----		0.5	mg/kg	----	<0.5	----	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3		1	mg/kg	----	<1	----	<1
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4		0.02	mg/kg	----	<0.02	----	<0.02
1,1-Dichloroethene	75-35-4		0.01	mg/kg	----	<0.01	----	<0.01
Methylene chloride	75-09-2		0.4	mg/kg	----	<0.4	----	<0.4
trans-1,2-Dichloroethene	156-60-5		0.02	mg/kg	----	<0.02	----	<0.02
cis-1,2-Dichloroethene	156-59-2		0.01	mg/kg	----	<0.01	----	<0.01
Chloroform	67-66-3		0.02	mg/kg	----	<0.02	----	<0.02
1,1,1-Trichloroethane	71-55-6		0.01	mg/kg	----	<0.01	----	<0.01
Carbon Tetrachloride	56-23-5		0.01	mg/kg	----	<0.01	----	<0.01
1,2-Dichloroethane	107-06-2		0.02	mg/kg	----	<0.02	----	<0.02
Trichloroethene	79-01-6		0.02	mg/kg	----	<0.02	----	<0.02
1,1,2-Trichloroethane	79-00-5		0.04	mg/kg	----	<0.04	----	<0.04
Tetrachloroethene	127-18-4		0.02	mg/kg	----	0.02	----	<0.02
1,1,1,2-Tetrachloroethane	630-20-6		0.01	mg/kg	----	<0.01	----	<0.01
1,1,2,2-Tetrachloroethane	79-34-5		0.02	mg/kg	----	<0.02	----	<0.02
Hexachlorobutadiene	87-68-3		0.02	mg/kg	----	<0.02	----	<0.02
Chlorobenzene	108-90-7		0.02	mg/kg	----	<0.02	----	<0.02
1,4-Dichlorobenzene	106-46-7		0.02	mg/kg	----	<0.02	----	<0.02
1,2-Dichlorobenzene	95-50-1		0.02	mg/kg	----	<0.02	----	<0.02
1,2,4-Trichlorobenzene	120-82-1		0.01	mg/kg	----	<0.01	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----		0.01	mg/kg	----	0.02	----	<0.01
^ Sum of other chlorinated hydrocarbons	----		0.01	mg/kg	----	0.02	----	<0.01
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8		0.03	mg/kg	----	<0.03	----	<0.03
2,4-Dichlorophenol	120-83-2		0.03	mg/kg	----	<0.03	----	<0.03
2,6-Dichlorophenol	87-65-0		0.03	mg/kg	----	<0.03	----	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB04_4.0m	NEL-LFB05_0.5m	NEL-LFB05_1.0m	NEL-LFB05_2.0m	NEL-LFB05_3.0m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-025	EM1811150-028	EM1811150-029	EM1811150-030	EM1811150-031
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		----	----	<0.03	----	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		----	----	<0.05	----	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		----	----	<0.05	----	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		----	----	<0.03	----	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		----	----	<0.05	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		----	----	<0.2	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		----	----	<0.03	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		----	----	<1	----	<1
2-Methylphenol	95-48-7	1	mg/kg		----	----	<1	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	<1	----	<1
2-Nitrophenol	88-75-5	1	mg/kg		----	----	<1	----	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg		----	----	<1	----	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg		----	----	<5	----	<5
4-Nitrophenol	100-02-7	5	mg/kg		----	----	<5	----	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		----	----	<5	----	<5
Dinoseb	88-85-7	5	mg/kg		----	----	<5	----	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		----	----	<5	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		----	----	<1	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		----	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg		----	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg		----	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		----	----	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg		----	----	<0.5	----	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg		----	----	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		----	----	<0.5	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		----	----	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB04_4.0m	NEL-LFB05_0.5m	NEL-LFB05_1.0m	NEL-LFB05_2.0m	NEL-LFB05_3.0m
Client sampling date / time				11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-025	EM1811150-028	EM1811150-029	EM1811150-030	EM1811150-031
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	0.6	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	1.2	----	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	----	<0.03	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	----	<0.03	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg	----	----	<0.03	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	----	----	<0.03	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg	----	----	<0.03	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg	----	----	<0.03	----	<0.03
Aldrin	309-00-2	0.03	mg/kg	----	----	<0.03	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	----	<0.03	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	----	----	<0.03	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	----	----	<0.03	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	----	----	<0.03	----	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg	----	----	<0.03	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	----	<0.03	----	<0.03
Endrin	72-20-8	0.03	mg/kg	----	----	<0.03	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	----	----	<0.03	----	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	----	<0.03	----	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	----	----	<0.05	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	----	----	<0.03	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	----	<0.03	----	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	----	----	<0.03	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB04_4.0m	NEL-LFB05_0.5m	NEL-LFB05_1.0m	NEL-LFB05_2.0m	NEL-LFB05_3.0m
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-025	EM1811150-028	EM1811150-029	EM1811150-030	EM1811150-031
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----	<10
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	130	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	130	----	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	80.8	----	85.4
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	72.8	----	81.3
Toluene-D8	2037-26-5	0.1	%	----	----	----	86.3	----	90.2
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	91.5	----	62.8
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%	----	----	----	120	----	106
2-Chlorophenol-D4	93951-73-6	0.025	%	----	----	----	88.5	----	85.1
2,4,6-Tribromophenol	118-79-6	0.025	%	----	----	----	73.2	----	115
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%	----	----	----	125	----	120
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	----	----	----	116	----	91.5
2-Fluorobiphenyl	321-60-8	0.025	%	----	----	----	103	----	111
Anthracene-d10	1719-06-8	0.025	%	----	----	----	99.2	----	96.1
4-Terphenyl-d14	1718-51-0	0.025	%	----	----	----	97.5	----	94.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB06_0.1m	NEL-LFB06_0.5m	NEL-LFB06_2.0m	NEL-LFB06_3.0m	NEL-LFB07_0.5m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-034	EM1811150-035	EM1811150-036	EM1811150-037	EM1811150-041
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	----	6.4	6.1	----	----	5.4
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	16.5	20.5	12.3	16.9	15.7	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	No	----	No	No
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	No	----	No	No
Asbestos Type	1332-21-4	-	--	----	-	-	----	-	-
Sample weight (dry)	----	0.01	g	----	419	346	----	428	
APPROVED IDENTIFIER:	----	-	--	----	E.DAOS	E.DAOS	----	E.DAOS	
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	6	5	<5	6	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Copper	7440-50-8	5	mg/kg	16	39	10	12	11	
Lead	7439-92-1	5	mg/kg	37	39	11	17	18	
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2	
Nickel	7440-02-0	2	mg/kg	25	37	18	22	16	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2	
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5	
Zinc	7440-66-6	5	mg/kg	60	122	40	52	43	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	<0.5	<0.5	----	<0.5	
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	----	<1	<1	----	1	
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	----	520	260	----	390	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	<0.1	----	<0.1	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	----	<0.2	
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	----	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	----	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB06_0.1m	NEL-LFB06_0.5m	NEL-LFB06_2.0m	NEL-LFB06_3.0m	NEL-LFB07_0.5m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-034	EM1811150-035	EM1811150-036	EM1811150-037	EM1811150-041
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
meta- & para-Xylene	108-38-3	106-42-3	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
Styrene	100-42-5		0.5	mg/kg	----	<0.5	<0.5	----	<0.5
ortho-Xylene	95-47-6		0.5	mg/kg	----	<0.5	<0.5	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----		0.2	mg/kg	----	<0.2	<0.2	----	<0.2
^ Total Xylenes	----		0.5	mg/kg	----	<0.5	<0.5	----	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3		1	mg/kg	----	<1	<1	----	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,1-Dichloroethene	75-35-4		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
Methylene chloride	75-09-2		0.4	mg/kg	----	<0.4	<0.4	----	<0.4
trans-1,2-Dichloroethene	156-60-5		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
cis-1,2-Dichloroethene	156-59-2		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
Chloroform	67-66-3		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,1,1-Trichloroethane	71-55-6		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
Carbon Tetrachloride	56-23-5		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
1,2-Dichloroethane	107-06-2		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Trichloroethene	79-01-6		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,1,2-Trichloroethane	79-00-5		0.04	mg/kg	----	<0.04	<0.04	----	<0.04
Tetrachloroethene	127-18-4		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,1,1,2-Tetrachloroethane	630-20-6		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
1,1,2,2-Tetrachloroethane	79-34-5		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Hexachlorobutadiene	87-68-3		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
Chlorobenzene	108-90-7		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,4-Dichlorobenzene	106-46-7		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,2-Dichlorobenzene	95-50-1		0.02	mg/kg	----	<0.02	<0.02	----	<0.02
1,2,4-Trichlorobenzene	120-82-1		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
^ Sum of other chlorinated hydrocarbons	----		0.01	mg/kg	----	<0.01	<0.01	----	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8		0.03	mg/kg	----	<0.03	<0.03	----	<0.03
2,4-Dichlorophenol	120-83-2		0.03	mg/kg	----	<0.03	<0.03	----	<0.03
2,6-Dichlorophenol	87-65-0		0.03	mg/kg	----	<0.03	<0.03	----	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB06_0.1m	NEL-LFB06_0.5m	NEL-LFB06_2.0m	NEL-LFB06_3.0m	NEL-LFB07_0.5m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-034	EM1811150-035	EM1811150-036	EM1811150-037	EM1811150-041
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	----	<0.03	<0.03	<0.03	----	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	<0.03	<0.03	<0.03	----	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg	----	<0.2	<0.2	<0.2	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	<0.03	<0.03	<0.03	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	----	<1	<1	<1	----	<1
2-Methylphenol	95-48-7	1	mg/kg	----	<1	<1	<1	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	<1	<1	----	<1
2-Nitrophenol	88-75-5	1	mg/kg	----	<1	<1	<1	----	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	----	<1	<1	<1	----	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	----	<5	<5	<5	----	<5
4-Nitrophenol	100-02-7	5	mg/kg	----	<5	<5	<5	----	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	----	<5	<5	<5	----	<5
Dinoseb	88-85-7	5	mg/kg	----	<5	<5	<5	----	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	----	<5	<5	<5	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	<1	<1	<1	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB06_0.1m	NEL-LFB06_0.5m	NEL-LFB06_2.0m	NEL-LFB06_3.0m	NEL-LFB07_0.5m
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-034	EM1811150-035	EM1811150-036	EM1811150-037	EM1811150-041
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	0.6	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	1.2	----	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Aldrin	309-00-2	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Endrin	72-20-8	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	<0.03	<0.03	----	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	----	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB06_0.1m	NEL-LFB06_0.5m	NEL-LFB06_2.0m	NEL-LFB06_3.0m	NEL-LFB07_0.5m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-034	EM1811150-035	EM1811150-036	EM1811150-037	EM1811150-041
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	<10	----	<10
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	<100	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg	----	<50	<50	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	<100	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	<50	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	<10	----	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	75.1	73.2	----	----	74.3
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	93.3	84.5	----	----	82.6
Toluene-D8	2037-26-5	0.1	%	----	75.2	77.3	----	----	82.7
4-Bromofluorobenzene	460-00-4	0.1	%	----	87.0	85.8	----	----	81.4
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%	----	84.9	111	----	----	114
2-Chlorophenol-D4	93951-73-6	0.025	%	----	65.6	83.3	----	----	69.3
2,4,6-Tribromophenol	118-79-6	0.025	%	----	80.5	81.3	----	----	85.1
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%	----	90.4	99.5	----	----	73.7
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	----	88.8	85.3	----	----	64.2
2-Fluorobiphenyl	321-60-8	0.025	%	----	99.0	99.2	----	----	99.0
Anthracene-d10	1719-06-8	0.025	%	----	88.2	98.0	----	----	98.6
4-Terphenyl-d14	1718-51-0	0.025	%	----	135	96.3	----	----	107



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB07_2.0m	NEL-LFB07_3.0m	NEL-LFB07_4.0m	NEL-LFB08_0.5m	NEL-LFB08_2.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-042	EM1811150-043	EM1811150-044	EM1811150-047	EM1811150-048
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.6	----	----	----	6.8
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.8	12.1	16.0	17.5	14.3
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	----	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	----	----	No	No
Asbestos Type	1332-21-4	-	--		-	----	----	-	-
Sample weight (dry)	----	0.01	g		214	----	----	179	404
APPROVED IDENTIFIER:	----	-	--		E.DAOS	----	----	E.DAOS	E.DAOS
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	7	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		14	13	8	11	14
Lead	7439-92-1	5	mg/kg		14	13	14	19	10
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		20	23	17	17	20
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		45	38	35	45	43
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.2	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	----	----	----	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	----	----	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		290	----	----	----	340
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB07_2.0m	NEL-LFB07_3.0m	NEL-LFB07_4.0m	NEL-LFB08_0.5m	NEL-LFB08_2.0m
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-042	EM1811150-043	EM1811150-044	EM1811150-047	EM1811150-048
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
meta- & para-Xylene	108-38-3	106-42-3	0.5	mg/kg	<0.5	----	----	<0.5
Styrene	100-42-5		0.5	mg/kg	<0.5	----	----	<0.5
ortho-Xylene	95-47-6		0.5	mg/kg	<0.5	----	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----		0.2	mg/kg	<0.2	----	----	<0.2
^ Total Xylenes	----		0.5	mg/kg	<0.5	----	----	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3		1	mg/kg	<1	----	----	<1
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4		0.02	mg/kg	<0.02	----	----	<0.02
1,1-Dichloroethene	75-35-4		0.01	mg/kg	<0.01	----	----	<0.01
Methylene chloride	75-09-2		0.4	mg/kg	<0.4	----	----	<0.4
trans-1,2-Dichloroethene	156-60-5		0.02	mg/kg	<0.02	----	----	<0.02
cis-1,2-Dichloroethene	156-59-2		0.01	mg/kg	<0.01	----	----	<0.01
Chloroform	67-66-3		0.02	mg/kg	<0.02	----	----	<0.02
1,1,1-Trichloroethane	71-55-6		0.01	mg/kg	<0.01	----	----	<0.01
Carbon Tetrachloride	56-23-5		0.01	mg/kg	<0.01	----	----	<0.01
1,2-Dichloroethane	107-06-2		0.02	mg/kg	<0.02	----	----	<0.02
Trichloroethene	79-01-6		0.02	mg/kg	<0.02	----	----	<0.02
1,1,2-Trichloroethane	79-00-5		0.04	mg/kg	<0.04	----	----	<0.04
Tetrachloroethene	127-18-4		0.02	mg/kg	<0.02	----	----	<0.02
1,1,1,2-Tetrachloroethane	630-20-6		0.01	mg/kg	<0.01	----	----	<0.01
1,1,2,2-Tetrachloroethane	79-34-5		0.02	mg/kg	<0.02	----	----	<0.02
Hexachlorobutadiene	87-68-3		0.02	mg/kg	<0.02	----	----	<0.02
Chlorobenzene	108-90-7		0.02	mg/kg	<0.02	----	----	<0.02
1,4-Dichlorobenzene	106-46-7		0.02	mg/kg	<0.02	----	----	<0.02
1,2-Dichlorobenzene	95-50-1		0.02	mg/kg	<0.02	----	----	<0.02
1,2,4-Trichlorobenzene	120-82-1		0.01	mg/kg	<0.01	----	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----		0.01	mg/kg	<0.01	----	----	<0.01
^ Sum of other chlorinated hydrocarbons	----		0.01	mg/kg	<0.01	----	----	<0.01
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8		0.03	mg/kg	<0.03	----	----	<0.03
2,4-Dichlorophenol	120-83-2		0.03	mg/kg	<0.03	----	----	<0.03
2,6-Dichlorophenol	87-65-0		0.03	mg/kg	<0.03	----	----	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB07_2.0m	NEL-LFB07_3.0m	NEL-LFB07_4.0m	NEL-LFB08_0.5m	NEL-LFB08_2.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-042	EM1811150-043	EM1811150-044	EM1811150-047	EM1811150-048
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	----	----	----	<1
2-Methylphenol	95-48-7	1	mg/kg		<1	----	----	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	<1
2-Nitrophenol	88-75-5	1	mg/kg		<1	----	----	----	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	----	----	----	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	----	----	----	<5
4-Nitrophenol	100-02-7	5	mg/kg		<5	----	----	----	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	----	----	----	<5
Dinoseb	88-85-7	5	mg/kg		<5	----	----	----	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	----	----	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	----	----	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	<0.5
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB07_2.0m	NEL-LFB07_3.0m	NEL-LFB07_4.0m	NEL-LFB08_0.5m	NEL-LFB08_2.0m
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-042	EM1811150-043	EM1811150-044	EM1811150-047	EM1811150-048
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	----	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	----	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	----	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	----	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	----	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	----	----	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	----	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	----	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	----	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	----	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	----	----	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	----	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	----	----	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	----	----	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	----	----	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	----	----	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	----	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	----	----	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	----	----	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	----	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB07_2.0m	NEL-LFB07_3.0m	NEL-LFB07_4.0m	NEL-LFB08_0.5m	NEL-LFB08_2.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-042	EM1811150-043	EM1811150-044	EM1811150-047	EM1811150-048
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	<10
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		74.0	----	----	----	75.5
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		82.0	----	----	----	85.3
Toluene-D8	2037-26-5	0.1	%		116	----	----	----	79.8
4-Bromofluorobenzene	460-00-4	0.1	%		77.3	----	----	----	61.1
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		115	----	----	----	115
2-Chlorophenol-D4	93951-73-6	0.025	%		74.5	----	----	----	80.6
2,4,6-Tribromophenol	118-79-6	0.025	%		68.8	----	----	----	79.2
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		96.7	----	----	----	104
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		85.5	----	----	----	93.0
2-Fluorobiphenyl	321-60-8	0.025	%		99.9	----	----	----	108
Anthracene-d10	1719-06-8	0.025	%		94.0	----	----	----	103
4-Terphenyl-d14	1718-51-0	0.025	%		103	----	----	----	113



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB08_3.0m	NEL-LFB08_4.0m	NEL-LFB09_0.5m	NEL-LFB09_1.0m	NEL-LFB09_2.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-049	EM1811150-050	EM1811150-053	EM1811150-054	EM1811150-055
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	----	6.8	6.7	6.6	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	13.7	11.8	16.7	16.4	11.2	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	No	No	
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	----	No	No	
Asbestos Type	1332-21-4	-	--	----	----	----	-	-	
Sample weight (dry)	----	0.01	g	----	----	----	600	284	
APPROVED IDENTIFIER:	----	-	--	----	----	----	E.DAOS	E.DAOS	
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	<5	12	<5	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Copper	7440-50-8	5	mg/kg	10	9	11	14	10	
Lead	7439-92-1	5	mg/kg	8	10	26	18	9	
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2	
Nickel	7440-02-0	2	mg/kg	15	15	16	18	17	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2	
Tin	7440-31-5	5	mg/kg	<5	<5	<5	5	<5	
Zinc	7440-66-6	5	mg/kg	33	36	42	59	33	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	----	<1	<1	<1	----	
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	----	230	350	300	----	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	<0.1	<0.1	----	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	<0.2	----	
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB08_3.0m	NEL-LFB08_4.0m	NEL-LFB09_0.5m	NEL-LFB09_1.0m	NEL-LFB09_2.0m
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-049	EM1811150-050	EM1811150-053	EM1811150-054	EM1811150-055
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	----	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg	----	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	----	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	----	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	----	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	----	<0.03	<0.03	<0.03	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB08_3.0m	NEL-LFB08_4.0m	NEL-LFB09_0.5m	NEL-LFB09_1.0m	NEL-LFB09_2.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-049	EM1811150-050	EM1811150-053	EM1811150-054	EM1811150-055
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	----	<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg	----	<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	<0.03	<0.03	<0.03	<0.03	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	----	<1	<1	<1	<1	----
2-Methylphenol	95-48-7	1	mg/kg	----	<1	<1	<1	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	<1	<1	<1	----
2-Nitrophenol	88-75-5	1	mg/kg	----	<1	<1	<1	<1	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	----	<1	<1	<1	<1	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	----	<5	<5	<5	<5	----
4-Nitrophenol	100-02-7	5	mg/kg	----	<5	<5	<5	<5	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	----	<5	<5	<5	<5	----
Dinoseb	88-85-7	5	mg/kg	----	<5	<5	<5	<5	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	----	<5	<5	<5	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	<1	<1	<1	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----
Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB08_3.0m	NEL-LFB08_4.0m	NEL-LFB09_0.5m	NEL-LFB09_1.0m	NEL-LFB09_2.0m
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-049	EM1811150-050	EM1811150-053	EM1811150-054	EM1811150-055
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	0.6	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	1.2	1.2	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg	----	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg	----	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg	----	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	----	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	<10	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB08_3.0m	NEL-LFB08_4.0m	NEL-LFB09_0.5m	NEL-LFB09_1.0m	NEL-LFB09_2.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-049	EM1811150-050	EM1811150-053	EM1811150-054	EM1811150-055
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg	----	<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	76.2	73.5	76.9	76.9	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	87.8	91.3	77.9	77.9	----
Toluene-D8	2037-26-5	0.1	%	----	72.6	74.4	74.4	74.4	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	85.6	89.0	85.9	85.9	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%	----	93.2	101	109	109	----
2-Chlorophenol-D4	93951-73-6	0.025	%	----	78.3	70.0	83.1	83.1	----
2,4,6-Tribromophenol	118-79-6	0.025	%	----	72.2	77.9	92.0	92.0	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%	----	96.5	80.8	93.7	93.7	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	----	89.0	79.8	91.3	91.3	----
2-Fluorobiphenyl	321-60-8	0.025	%	----	93.5	85.0	96.9	96.9	----
Anthracene-d10	1719-06-8	0.025	%	----	99.8	91.0	103	103	----
4-Terphenyl-d14	1718-51-0	0.025	%	----	95.5	87.2	98.7	98.7	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB09_3.0m	NEL-LFB10_0.5m	NEL-LFB10_2.0m	NEL-LFB10_3.0m	NEL-LFB10_4.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-056	EM1811150-059	EM1811150-060	EM1811150-061	EM1811150-062
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	----	----	----	6.4	----	6.9
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	10.0	7.9	12.4	11.9	15.8	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	No	No	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	No	No	----	----
Asbestos Type	1332-21-4	-	--	----	-	-	-	----	----
Sample weight (dry)	----	0.01	g	----	303	172	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	E.DAOS	E.DAOS	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	7	5	<5	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Copper	7440-50-8	5	mg/kg	9	30	13	10	8	
Lead	7439-92-1	5	mg/kg	8	8	13	12	11	
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2	
Nickel	7440-02-0	2	mg/kg	15	4	22	16	16	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2	
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5	
Zinc	7440-66-6	5	mg/kg	31	46	39	37	31	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	<0.5	
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	----	----	<1	----	<1	
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	----	----	510	----	270	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	<0.1	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	<0.2	
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB09_3.0m	NEL-LFB10_0.5m	NEL-LFB10_2.0m	NEL-LFB10_3.0m	NEL-LFB10_4.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-056	EM1811150-059	EM1811150-060	EM1811150-061	EM1811150-062
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
meta- & para-Xylene	108-38-3	106-42-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Styrene	100-42-5		0.5	mg/kg	----	----	<0.5	----	<0.5
ortho-Xylene	95-47-6		0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----		0.2	mg/kg	----	----	<0.2	----	<0.2
^ Total Xylenes	----		0.5	mg/kg	----	----	<0.5	----	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3		1	mg/kg	----	----	<1	----	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4		0.02	mg/kg	----	----	<0.02	----	<0.02
1,1-Dichloroethene	75-35-4		0.01	mg/kg	----	----	<0.01	----	<0.01
Methylene chloride	75-09-2		0.4	mg/kg	----	----	<0.4	----	<0.4
trans-1,2-Dichloroethene	156-60-5		0.02	mg/kg	----	----	<0.02	----	<0.02
cis-1,2-Dichloroethene	156-59-2		0.01	mg/kg	----	----	<0.01	----	<0.01
Chloroform	67-66-3		0.02	mg/kg	----	----	<0.02	----	<0.02
1,1,1-Trichloroethane	71-55-6		0.01	mg/kg	----	----	<0.01	----	<0.01
Carbon Tetrachloride	56-23-5		0.01	mg/kg	----	----	<0.01	----	<0.01
1,2-Dichloroethane	107-06-2		0.02	mg/kg	----	----	<0.02	----	<0.02
Trichloroethene	79-01-6		0.02	mg/kg	----	----	<0.02	----	<0.02
1,1,2-Trichloroethane	79-00-5		0.04	mg/kg	----	----	<0.04	----	<0.04
Tetrachloroethene	127-18-4		0.02	mg/kg	----	----	<0.02	----	<0.02
1,1,1,2-Tetrachloroethane	630-20-6		0.01	mg/kg	----	----	<0.01	----	<0.01
1,1,2,2-Tetrachloroethane	79-34-5		0.02	mg/kg	----	----	<0.02	----	<0.02
Hexachlorobutadiene	87-68-3		0.02	mg/kg	----	----	<0.02	----	<0.02
Chlorobenzene	108-90-7		0.02	mg/kg	----	----	<0.02	----	<0.02
1,4-Dichlorobenzene	106-46-7		0.02	mg/kg	----	----	<0.02	----	<0.02
1,2-Dichlorobenzene	95-50-1		0.02	mg/kg	----	----	<0.02	----	<0.02
1,2,4-Trichlorobenzene	120-82-1		0.01	mg/kg	----	----	<0.01	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----		0.01	mg/kg	----	----	<0.01	----	<0.01
^ Sum of other chlorinated hydrocarbons	----		0.01	mg/kg	----	----	<0.01	----	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8		0.03	mg/kg	----	----	<0.03	----	<0.03
2,4-Dichlorophenol	120-83-2		0.03	mg/kg	----	----	<0.03	----	<0.03
2,6-Dichlorophenol	87-65-0		0.03	mg/kg	----	----	<0.03	----	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB09_3.0m	NEL-LFB10_0.5m	NEL-LFB10_2.0m	NEL-LFB10_3.0m	NEL-LFB10_4.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-056	EM1811150-059	EM1811150-060	EM1811150-061	EM1811150-062
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		----	----	<0.03	----	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		----	----	<0.05	----	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		----	----	<0.05	----	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		----	----	<0.03	----	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		----	----	<0.05	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		----	----	<0.2	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		----	----	<0.03	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		----	----	<1	----	<1
2-Methylphenol	95-48-7	1	mg/kg		----	----	<1	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	<1	----	<1
2-Nitrophenol	88-75-5	1	mg/kg		----	----	<1	----	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg		----	----	<1	----	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg		----	----	<5	----	<5
4-Nitrophenol	100-02-7	5	mg/kg		----	----	<5	----	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		----	----	<5	----	<5
Dinoseb	88-85-7	5	mg/kg		----	----	<5	----	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		----	----	<5	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		----	----	<1	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		----	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg		----	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg		----	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		----	----	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg		----	----	<0.5	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		----	----	<0.5	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		----	----	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	<0.5	----	<0.5
Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB09_3.0m	NEL-LFB10_0.5m	NEL-LFB10_2.0m	NEL-LFB10_3.0m	NEL-LFB10_4.0m
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-056	EM1811150-059	EM1811150-060	EM1811150-061	EM1811150-062
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	0.6	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	1.2	----	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	----	<0.03	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	----	<0.03	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg	----	----	<0.03	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	----	----	<0.03	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg	----	----	<0.03	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg	----	----	<0.03	----	<0.03
Aldrin	309-00-2	0.03	mg/kg	----	----	<0.03	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	----	<0.03	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	----	----	<0.03	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	----	----	<0.03	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	----	----	<0.03	----	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg	----	----	<0.03	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	----	<0.03	----	<0.03
Endrin	72-20-8	0.03	mg/kg	----	----	<0.03	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	----	----	<0.03	----	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	----	<0.03	----	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	----	----	<0.05	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	----	----	<0.03	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	----	<0.03	----	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	----	<0.05	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	----	----	<0.03	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB09_3.0m	NEL-LFB10_0.5m	NEL-LFB10_2.0m	NEL-LFB10_3.0m	NEL-LFB10_4.0m
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-056	EM1811150-059	EM1811150-060	EM1811150-061	EM1811150-062
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----	<10
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	71.4	----	73.2
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	----	83.7	----	74.5
Toluene-D8	2037-26-5	0.1	%	----	----	----	102	----	72.5
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	----	68.0	----	77.4
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%	----	----	----	96.7	----	134
2-Chlorophenol-D4	93951-73-6	0.025	%	----	----	----	74.4	----	93.2
2,4,6-Tribromophenol	118-79-6	0.025	%	----	----	----	73.6	----	75.3
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%	----	----	----	92.2	----	58.6
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	----	----	----	86.6	----	73.6
2-Fluorobiphenyl	321-60-8	0.025	%	----	----	----	101	----	81.4
Anthracene-d10	1719-06-8	0.025	%	----	----	----	94.3	----	88.6
4-Terphenyl-d14	1718-51-0	0.025	%	----	----	----	98.3	----	116



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC3002	QC3003	----	----	----
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1811150-064	EM1811150-065	-----	-----	-----	-----
				Result	Result	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	6.9	6.5	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	17.1	14.2	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	7	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	8	13	----	----	----	----
Lead	7439-92-1	5	mg/kg	12	16	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	14	20	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	30	41	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	0.6	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	<1	<1	----	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	310	380	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC3002	QC3003	----	----	----
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1811150-064	EM1811150-065	-----	-----	-----
					Result	Result	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				QC3002	QC3003	----	----	----
Client sampling date / time				11-Jul-2018 00:00	11-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1811150-064	EM1811150-065	-----	-----	-----
				Result	Result	----	----	----

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				QC3002	QC3003	----	----	----
Client sampling date / time				11-Jul-2018 00:00	11-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1811150-064	EM1811150-065	-----	-----	-----
				Result	Result	----	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC3002	QC3003	----	----	----
Client sampling date / time					11-Jul-2018 00:00	11-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1811150-064	EM1811150-065	-----	-----	-----
				Result	Result		----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		78.2	74.5	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		83.5	83.4	----	----	----
Toluene-D8	2037-26-5	0.1	%		55.6	60.3	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		70.0	66.7	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		121	124	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		79.0	104	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		73.6	54.3	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		85.0	80.1	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		87.0	83.1	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		154	104	----	----	----
Anthracene-d10	1719-06-8	0.025	%		89.4	95.2	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		100	120	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB306	FB306	TB306	RB307	FB307
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-066	EM1811150-067	EM1811150-068	EM1811150-069	EM1811150-070
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		6.13	5.92	----	5.81	5.90
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	<0.0001	<0.0001
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	----	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	<0.005	<0.005
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	----	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
^ Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	<1	<1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
gamma-BHC	58-89-9	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	----	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB306	FB306	TB306	RB307	FB307
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-066	EM1811150-067	EM1811150-068	EM1811150-069	EM1811150-070
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	----	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	----	<2.0	<2.0
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	<5	<5
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	----	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	----	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	----	<5	<5
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	----	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	----	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	----	<5	<5
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	----	<5	<5
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	----	<5	<5
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	----	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	----	<5	<5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB306	FB306	TB306	RB307	FB307
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811150-066	EM1811150-067	EM1811150-068	EM1811150-069	EM1811150-070
				Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	<50	<50



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB306	FB306	TB306	RB307	FB307
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-066	EM1811150-067	EM1811150-068	EM1811150-069	EM1811150-070
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		88.5	85.1	----	81.1	92.3
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		89.0	83.7	----	79.5	90.5
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		88.9	83.1	----	77.5	87.7
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		95.4	100	----	97.8	94.4
Toluene-D8	2037-26-5	5	%		81.9	82.7	----	85.1	81.2
4-Bromofluorobenzene	460-00-4	5	%		96.7	98.5	----	98.6	96.7
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		28.6	30.6	----	27.9	32.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB306	FB306	TB306	RB307	FB307
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811150-066	EM1811150-067	EM1811150-068	EM1811150-069	EM1811150-070
					Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
2-Chlorophenol-D4	93951-73-6	1.0	%		68.4	72.4	----	68.0	78.3
2,4,6-Tribromophenol	118-79-6	1.0	%		69.7	61.9	----	63.6	76.7
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		78.5	82.8	----	78.2	89.6
Anthracene-d10	1719-06-8	1.0	%		87.9	85.4	----	79.8	91.9
4-Terphenyl-d14	1718-51-0	1.0	%		103	97.3	----	91.8	104
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		94.0	90.9	90.0	89.7	93.1
Toluene-D8	2037-26-5	2	%		83.0	74.7	78.6	75.7	82.1
4-Bromofluorobenzene	460-00-4	2	%		102	94.6	99.5	94.4	101



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB307	----	----	----	----
Client sampling date / time					11-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1811150-071	-----	-----	-----	-----
				Result	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		92.9	----	----	----	----
Toluene-D8	2037-26-5	2	%		82.6	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		105	----	----	----	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	NEL-LFB01_0.5m - 11-Jul-2018 00:00	Beige brown clay like soil plus multiple asbestos fragments approx 13 x 8 x 4mm and 1 x 1 x 1mm.
EA200: Description	NEL-LFB01_1.0m - 11-Jul-2018 00:00	Tan brown clay like soil plus multiple asbestos fragments approx 3 x 2 x 1mm and asbestos fibre bundles approx 1 x 0.5 x 0.5mm.
EA200: Description	NEL-LFB02_1.0m - 11-Jul-2018 00:00	Dark brown rocky soil with organic matter.
EA200: Description	NEL-LFB02_2.0m - 11-Jul-2018 00:00	Beige rocky soil with organic matter.
EA200: Description	NEL-LFB03_1.0m - 11-Jul-2018 00:00	Brown rocky soil with organic matter.
EA200: Description	NEL-LFB03_2.0m - 11-Jul-2018 00:00	Beige brown rocky soil with organic and synthetic mineral fibres.
EA200: Description	NEL-LFB04_0.5m - 11-Jul-2018 00:00	Brown clay like soil with rock and organic matter.
EA200: Description	NEL-LFB04_2.0m - 11-Jul-2018 00:00	Brown clay like soil.
EA200: Description	NEL-LFB05_1.0m - 11-Jul-2018 00:00	Brown clay like soil with organic matter.
EA200: Description	NEL-LFB05_2.0m - 11-Jul-2018 00:00	Brown clay like soil.
EA200: Description	NEL-LFB06_0.5m - 10-Jul-2018 00:00	Brown clay like soil.
EA200: Description	NEL-LFB06_2.0m - 10-Jul-2018 00:00	Brown clay like soil.
EA200: Description	NEL-LFB07_0.5m - 10-Jul-2018 00:00	Brown soil with organic matter.
EA200: Description	NEL-LFB07_2.0m - 10-Jul-2018 00:00	Dark brown clay like soil.
EA200: Description	NEL-LFB08_0.5m - 10-Jul-2018 00:00	Brown soil with rock matter.
EA200: Description	NEL-LFB08_2.0m - 10-Jul-2018 00:00	Brown clay like soil.
EA200: Description	NEL-LFB09_1.0m - 10-Jul-2018 00:00	Dark brown clay like soil.
EA200: Description	NEL-LFB09_2.0m - 10-Jul-2018 00:00	Brown orange clay like soil.
EA200: Description	NEL-LFB10_0.5m - 10-Jul-2018 00:00	Beige soil with rock and organic matter.
EA200: Description	NEL-LFB10_2.0m - 10-Jul-2018 00:00	Brown clay like soil.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	117
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	51	127
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129

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Work Order : EM1811150
Client : GHD PTY LTD
Project : 31350060910



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates - Continued			
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Received by: Nicole CALS
10.10 12/7/18

SCANNED

Job Number 31/35006/0910			GHD Office Melbourne			Laboratory: ALS Springvale										<p>PLEASE NOTE:</p> <ul style="list-style-type: none"> - Sign white copy on receipt and release of samples. - Samples are to be delivered to the Laboratory Address. - On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. - On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. - E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. <p>Results to be provided in ESDAT compatible format</p>									
Project North East Link - Landfill Assessment			Address: 2 - 4 Westall Rd, Springvale			Lab Contact: Shirley LeCornu																			
GHD Contact Kory Auch			Contact Email kory.auch@ghd.com																						
Standard TAT			Quote No./GHD Reference ME/124/18																						
Sample I.D.	Date	Time	Composite Sample	Sample Matrix S: Soil SL: Sludge W: Water A: Air	Preservative	Type J: soil jar B: bag V: vial G: glass bottle P: plastic bottle	Number	Volume (mL)	HOLD	IWRG621	IWRG621 - Metals Only	Asbestos presence	Volatile TPH/BTEX												
NEL-LFB01_0.1m	10/July/2018			S	N	J	1	250	X									No bag							
NEL-LFB01_0.5m	11/ / /2018			↓	↓	J B	1/1	↓	X																
NEL-LFB01_1.0m	11/ / /2018			↓	↓	J B	1/1	↓	X																
NEL-LFB01_2.0m	/ / /2018																								
NEL-LFB01_3.0m	11/July/2018			S	N	J, B	1, 1	250	X																
NEL-LFB01_4.0m	11/ / /2018			↓	↓	↓	↓	↓	X																
NEL-LFB01_5.0m	11/ / /2018			↓	↓	↓	↓	↓	X																
NEL-LFB02_0.1m	10/ / /2018					J	1		X									No bag							
NEL-LFB02_0.5m	11/ / /2018					↓	↓	↓	X																
NEL-LFB02_1.0m	11/ / /2018					↓	↓	↓	X																
NEL-LFB02_2.0m	11/ / /2018					↓	↓	↓	X																
NEL-LFB02_3.0m	11/ / /2018					↓	↓	↓	X																
NEL-LFB02_4.0m	11/ / /2018					↓	↓	↓	X																
NEL-LFB02_5.0m	11/ / /2018					↓	↓	↓	X																
NEL-LFB03_0.1m	10/ / /2018					J	1		X									No							
NEL-LFB03_0.5m	11/ / /2018					↓	↓	↓	X																
NEL-LFB03_1.0m	11/ / /2018					↓	↓	↓	X																
NEL-LFB03_2.0m	11/ / /2018					↓	↓	↓	X																
NEL-LFB03_3.0m	11/ / /2018					↓	↓	↓	X																
NEL-LFB03_4.0m	11/July/2018			S	N	J, B	1, 1	250	X																
Sampled by: Kory Auch / Fran			Date/Time: 11/07/2018 14:50			Relinquished by:			Date/Time:																
Received by:			Date/Time:			Relinquished by:			Date/Time:																
Received by Courier:			Date/Time:			Relinquished by:			Date/Time:																
Received by Lab:			Date/Time:			Relinquished by:			Date/Time:																
Remarks:			Please CC reports and correspondence to David Quinn (david.quinn@ghd.com) & GHD Lab Reports																						

Environmental Division
Melbourne
Work Order Reference
EM1811150



Telephone : + 61-3-8649 9000

13/7/18

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne

180 Lonsdale Street, Melbourne 3000

Telephone: 613 8687 8000 Facsimile: 613 8687 8111

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Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale										PLEASE NOTE: - Sign white copy on receipt and release of samples. - Samples are to be delivered to the Laboratory Address. - On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. - On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. - E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format						
Project North East Link - Landfill Assessment		Contact Email kory_auch@ghd.com		Address: 2 - 4 Westall Rd, Springvale Lab Contact: Shirley LeCornu																
GHD Contact Kory Auch		Quote No./GHD Reference ME/124/18																		
Standard TAT																				
Sample I.D.	Date	Time	Composite Sample	Sample Matrix S: Soil SLL Sludge W: Water A: Air GWC: Groundwater	Preservative	Type J: soil jar B: bag V: vial G: glass bottle P: plastic bottle	Number	Volume (mL)	HOLD	IWRG621	IWRG621 - Metals Only	Asbestos presence	Volatile TPH/BTEX							Remarks
NEL-LFB03_5.0m	11/July/2018			S	N	J, B	1, 1	250	X											
NEL-LFB04_0.1m	10/ /2018					J, B	1, 1		X									No bag		
NEL-LFB04_0.5m	11/ /2018					J, B	1, 1		X											
NEL-LFB04_2.0m	11/ /2018					J, B	1, 1		X											
NEL-LFB04_3.0m	11/ /2018					J, B	1, 1		X											
NEL-LFB04_4.0m	11/ /2018					J, B	1, 1		X											
NEL-LFB04_5.0m	11/July/2018					J, B	1, 1		X											
NEL-LFB04_	/ /2018					J, B	1, 1		X											
NEL-LFB05_0.1m	10/July/2018			S	N	J, B	1, 1		X									No bag		
NEL-LFB05_0.5m	11/ /2018					J, B	1, 1		X											
NEL-LFB05_1.0m	11/ /2018					J, B	1, 1		X											
NEL-LFB05_2.0m	11/ /2018					J, B	1, 1		X											
NEL-LFB05_3.0m	11/ /2018					J, B	1, 1		X											
NEL-LFB05_4.0m	11/ /2018					J, B	1, 1		X											
NEL-LFB05_5.0m	11/July/2018					J, B	1, 1		X											
NEL-LFB05_	/ /2018					J, B	1, 1		X											
NEL-LFB06_0.1m	10/July/2018			S	N	J, B	1, 1		X									No bag		
NEL-LFB06_0.5m	10/ /2018					J, B	1, 1		X											
NEL-LFB06_2.0m	10/ /2018					J, B	1, 1		X											
NEL-LFB06_3.0m	10/July/2018			S	N	J	1, 1	250	X											
Sampled by: Kory Auch / Z. Quinn		Date/Time: 11/07/2018 @ 14:50		Relinquished by:		Date/Time:														
Received by: W. Quinn (ALS)		Date/Time: 10/7/18 10:10		Relinquished by:		Date/Time:														
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:														
Received by Lab:		Date/Time:		Relinquished by:		Date/Time:														
Remarks:		Please CC reports and correspondence to David Quinn (david.quinn@ghd.com) & GHD Lab Reports																		

GHD



Telephone: 613 8687 8000 Facsimile: 613 8687 8111

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CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne

180 Lonsdale Street, Melbourne 3000

Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Page 45 of 45

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale										PLEASE NOTE: - Sign white copy on receipt and release of samples. - Samples are to be delivered to the Laboratory Address. - On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. - On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. - E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format							
Project North East Link - Landfill Assessment		Contact Email kory.auch@ghd.com		Address: 2 - 4 Westall Rd, Springvale Lab Contact: Shirley LeCornu																	
GHD Contact Kory Auch		Quote No./GHD Reference ME/124/18																			
Standard TAT																					
Sample I.D.	Date	Time	Composite Sample	Sample Matrix B: Soil A: Air GW: Groundwater	Preservative	Type J: soil jar B: bag V: val G: glass bottle P: plastic bottle	Number	Volume (mL)	HOLD	IWRG621	IWRG621 - Metals Only	Asbestos presence	Volatile TPH/BTEX							Remarks	
NEL-LFB09_2.0m	10 / July /2018			S	N	J/B	1,1	250	X												
NEL-LFB09_3.0m	10 / July /2018			↓	↓	↓	↓	↓	X												
NEL-LFB09_4.0m	10 / July /2018			S	N	J/B	1,1	250	X												
NEL-LFB09_	/ /2018																				
NEL-LFB10_0.1m	10 / July /2018			S	N	J/B	1,1	250	X											No bag	
NEL-LFB10_0.5m	1 / /2018			↓	↓	J/B	1,1	↓	X												
NEL-LFB10_2.0m	1 / /2018			↓	↓	↓	↓	↓	X												
NEL-LFB10_3.0m	1 / /2018			↓	↓	↓	↓	↓	X												
NEL-LFB10_4.0m	↓ / /2018			↓	↓	↓	↓	↓	X												
NEL-LFB10_5.0m	10 / July /2018			S	N	J/B	1,1	250	X												
NEL-LFB10_	/ /2018																				
QC3002	11 / July /2018			S	N	J/B	1	250	X												
QC4002	11 / /2018			S	N	J	1	250	X											Please send to Eurofins for equivalent analysis	
QC3003	11 / /2018			S	N	J	1	250	X												
QC4003	11 / July /2018			S	N	J	1	250	X											Please send to Eurofins for equivalent analysis	
RB306	10 / July /2018			W	Y	V,G,P	2,1,5	-	X												
FB306	10 / /2018					V,G,P	2,1,5	-	X												
TB306	10 / /2018			↓	↓	V	2	-	X												
RB307	11 / /2018			↓	↓	V,G,P	2,1,5	-	X												
FB307	11 / July /2018			W	Y	V,G,P	2,1,5	-	X												
Sampled by:		Kory Auch / 76 al		Date/Time:		11/07/2018 @ 14:50		Relinquished by:				Date/Time:									
Received by:		NLS/LOX CALS)		Date/Time:		12/7/18 10.10		Relinquished by:				Date/Time:									
Received by Courier:				Date/Time:				Relinquished by:				Date/Time:									
Received by Lab:				Date/Time:				Relinquished by:				Date/Time:									
Remarks:		Please CC reports and correspondence to David Quinn (david.quinn@ghd.com) & GHD Lab Reports																			

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Job Number 31/35006/0910	GHD Office Melbourne		Laboratory: ALS Springvale		PLEASE NOTE: - Sign white copy on receipt and release of samples. - Samples are to be delivered to the Laboratory Address. - On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. - On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. - E-mail results to the GHD Contact with the GHD Job Number in the email subject line. <u>Results to be provided in ESDAT compatible format</u>													
Project North East Link - Landfill Assessment			Address: 2 - 4 Westall Rd, Springavale Lab Contact: Shirley LeCornu															
GHD Contact Kory Auch	Contact Email kory.auch@ghd.com																	
Standard TAT			Quote No./GHD Reference ME/124/18															
Sample I.D.	Date	Time	Composite Sample	Sample Matrix W: Soil AL: Sludge W: Water A: Air GW: Groundwater	Preservative	Container			Analyses Required									
						Type J: soil jar B: bag V: vial G: glass bottle P: plastic bottle	Number	Volume (mL)	HOLD	IWRG621	IWRG621 - Metals Only	Asbestos presence	Volatile TPH/BTEX					
TB307	11 / July / 2018			W Y		V	2	200	X									
RB308	/ / 2018																	
FB308	/ / 2018																	
TB308	/ / 2018																	
Sampled by:		Kory Auch / Kc	Date/Time:		11 / 07 / 2018 @ 14:50		Relinquished by:				Date/Time:							
Received by:		Nisa Leal (ALS)	Date/Time:		12 / 7 / 18 10:10		Relinquished by:				Date/Time:							
Received by Courier:			Date/Time:				Relinquished by:				Date/Time:							
Received by Lab:			Date/Time:				Relinquished by:				Date/Time:							
Remarks:			Please CC reports and correspondence to David Quinn (david.quinn@ghd.com) & GHD Lab Reports															

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne

180 Leederville Street, Melbourne 3000

Telephone: 613 8667 8000 Fax: 613 8667 8111

COC Rec'd 12/7/18 1730 Roy

Page 1 of 5

Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		<p>PLEASE NOTE:</p> <p>Sign and date every container and container of sample.</p> <p>Containers are to be delivered to the Laboratory Address.</p> <p>On receipt of samples, the Laboratory cannot be held responsible for any damage to or loss of samples.</p> <p>Confirmation of analysis should be sent to the client with results.</p> <p>Final report is released to the client once the client has signed for the results.</p> <p>Contact details for the GHD Contact with the GHD Job Number in the event of any queries.</p> <p>Results to be provided in LIMSAT compatible format.</p>																					
Project North East Link - Landfill Assessment		Contact Email kory.auch@ghd.com		Address: 2 - 4 Westall Rd, Springvale												Lab Contact: Shirley LeComu											
GHD Contact Kory Auch		Quote No./GHD Reference ME124/18																									
Standard TAT																											
Sample I.D.	Date	Time	Composite Sample	Sample Size 1.0g, 1.0g, 1.0g	Preservative	Type 1.0g per 1.0g bag 1.0g per 1.0g glass bottle 1.0g per 1.0g plastic bottle	Number	Volume (mL)	HOLD	IWRG21	IWRG21 - Metals Only	Asbestos presence	Volatile TPH/TEX	Analysis Required						Remarks							
NEL-LFB01_0.1m	10 July /2018			S	N	J, B	1, 1	250	X																		
NEL-LFB01_0.5m	11 / /2018								X																		
NEL-LFB01_1.0m	11 / /2018								X																		
NEL-LFB01_2.0m	11 / /2018								X																		
NEL-LFB01_3.0m	11 July /2018			S	N	J, B	1, 1	250	X																		
NEL-LFB01_4.0m	11 / /2018								X																		
NEL-LFB01_5.0m	11 / /2018								X																		
NEL-LFB02_0.1m	10 / /2018								X																		
NEL-LFB02_0.5m	11 / /2018								X																		
NEL-LFB02_1.0m	11 / /2018								X																		
NEL-LFB02_2.0m	11 / /2018								X																		
NEL-LFB02_3.0m	11 / /2018								X																		
NEL-LFB02_4.0m	11 / /2018								X																		
NEL-LFB02_5.0m	11 / /2018								X																		
NEL-LFB03_0.1m	10 / /2018								X																		
NEL-LFB03_0.5m	11 / /2018								X																		
NEL-LFB03_1.0m	11 / /2018								X																		
NEL-LFB03_2.0m	11 / /2018								X																		
NEL-LFB03_3.0m	11 / /2018								X																		
NEL-LFB03_4.0m	11 July /2018			S	N	J, B	1, 1	250	X																		
Sampled by:	Kory Auch / Kahan		Date/Time:	11/07/2018 14:50		Relinquished by:				Date/Time:																	
Received by:			Date/Time:			Relinquished by:				Date/Time:																	
Received by Courier:			Date/Time:			Relinquished by:				Date/Time:																	
Received by Lab:			Date/Time:			Relinquished by:				Date/Time:																	

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
280 Lansdale Street, Melbourne 3002
Telephone: 013 9077 6000 Fax: 013 9077 6111

25

Job Number 3105006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		PLEASE NOTE: - Sign where every container was released from custody. - Samples are to be delivered to the Laboratory Address. - On receipt of samples, the Laboratory contact to sign while away and (optional) to GHD Contact. - On completion of analysis, please return with supply with receipt. This data is returned to the customer once the receipt has signed for the samples. - E-mail results to the GHD Contact with the GHD job Number in the e-mail subject line. - Samples to be analysed in 24 hours of receipt unless otherwise stated.															
Project North East Link - Landfill Assessment		Contact Email kory.auch@ghd.com		Address: 2 - 4 Westell Rd, Springvale																	
GHD Contact Kory Auch		Quote No./GHD Reference ME/124/18		Lab Contact: Shirley LeComu																	
Standard TAT																					
Sample ID	Date	Time	Composite Sample	Sample Matrix To GHD or to Preservative	Type	Volume (mL)	HOLD	IRWG621	IRWG621 - Metals Only	Asbestos presence	Volatile TPH/BTEX	Remarks									
20 NEL-LFB03_5.0m	11/July/2018			S	N	J, B	1, 1	250	X												
21 NEL-LFB04_0.1m	11/July/2018								X												
22 NEL-LFB04_0.5m	11/July/2018								X												
23 NEL-LFB04_2.0m	11/July/2018								X												
24 NEL-LFB04_3.0m	11/July/2018								X												
25 NEL-LFB04_4.0m	11/July/2018								X												
26 NEL-LFB04_5.0m	11/July/2018								X												
27 NEL-LFB05_0.1m	10/July/2018			S	N	J, B	1, 1		X												
28 NEL-LFB05_0.5m	11/July/2018								X												
29 NEL-LFB05_1.0m	11/July/2018								X												
30 NEL-LFB05_2.0m	11/July/2018								X												
31 NEL-LFB05_3.0m	11/July/2018								X												
32 NEL-LFB05_4.0m	11/July/2018								X												
33 NEL-LFB05_5.0m	11/July/2018								X												
34 NEL-LFB06_0.1m	10/July/2018			S	N	J, B	1, 1		X												
35 NEL-LFB06_0.5m	10/July/2018								X												
36 NEL-LFB06_2.0m	10/July/2018								X												
37 NEL-LFB06_3.0m	10/July/2018			S	N	J	1, 1	250	X												
Sampled by: Kory Auch / [Signature]		Date/Time: 11/07/2018 0.14:50		Relinquished by:		Date/Time:															
Received by:		Date/Time:		Relinquished by:		Date/Time:															
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:															
Received by Lab:		Date/Time:		Relinquished by:		Date/Time:															
Remarks:		Please CC reports and correspondence to David Quinn (david.quinn@ghd.com) & GHD Lab Reports.																			

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 013 8687 8000 Facsimile: 013 8687 8111

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Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springvale		PLEASE NOTE: - Sign white copy on receipt and release of samples - Samples are to be delivered to the Laboratory Address - On receipt of samples, the laboratory contact to sign white copy and forward to GHD Contact - On completion of analyses please return white copy with results. This copy is to be returned to the contact once the courier has signed for the samples. - Email results to the GHD Contact with the GHD Job Number in the email subject line. Results to be provided in L808T compatible format																
Project North East Link - Landfill Assessment		Address: 2 - 4 Westall Rd, Springvale		Lab Contact: Shirley LeCornu																		
GHD Contact Kory Auch		Contact Email kory.auch@ghd.com																				
Standard TAT		Quote No./GHD Reference ME/124/18																				
Sample I.D.	Date	Time	Composite Sample	Sample Matrix (Soil, Air, Water, etc.)	Preservative	Container Type	Volume (mL)	HOLD	IWRG621	IWRG621 - Metals Only	Asbestos presence	Volatile TPH/BTEX	Remarks									
38 NEL-LFB06_4.0m	10/July/2018			S	N	J.B	1,1	250	X													
39 NEL-LFB06_5.0m	10/July/2018			S	N	J.B	1,1	250	X													
NEL-LFB06	/	/2018																				
40 NEL-LFB07_0.1m	10/July/2018			S	N	J.B	1,1	250	X													
41 NEL-LFB07_0.5m	10/ / /2018								X	X	X											
42 NEL-LFB07_2.0m	10/ / /2018								X	X	X											
43 NEL-LFB07_3.0m	10/ / /2018								X	X	X											
44 NEL-LFB07_4.0m	10/ / /2018								X	X	X											
45 NEL-LFB07_5.0m	10/July/2018								X													
NEL-LFB07																						
46 NEL-LFB08_0.1m	10/July/2018			S	N	J.B	1,1	250	X													
47 NEL-LFB08_0.5m	1 / / /								X	X	X											
48 NEL-LFB08_2.0m	1 / / /								X	X	X											
49 NEL-LFB08_3.0m	1 / / /								X	X	X											
50 NEL-LFB08_4.0m	1 / / /								X	X	X											
51 NEL-LFB08_5.0m	10/July/2018			S	N	J.B	1,1	250	X													
NEL-LFB08																						
52 NEL-LFB09_0.1m	10/July/2018			S	N	J.B	1,1	250	X													
53 NEL-LFB09_0.5m	10/July/2018								X	X	X											
54 NEL-LFB09_1.0m	10/July/2018								X													
Sampled by:		Kory Auch / J.M.		Date/Time:		11/07/2018 @ 14:50		Relinquished by:				Date/Time:										
Received by:				Date/Time:				Relinquished by:				Date/Time:										
Received by Courier:				Date/Time:				Relinquished by:				Date/Time:										
Received by Lab:				Date/Time:				Relinquished by:				Date/Time:										
Remarks:		Please CC reports and correspondence to David Quinn (david.quinn@ghd.com) & GHD Lab Reports.																				

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne

100 Corporation Street, Melbourne 3000

Telephone: 03 9595 7000 Facsimile: 03 9595 7001

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Job Number 31/35006/0910		GHD Office Melbourne		Laboratory: ALS Springfield				
Project North East Link - Landfill Assessment		Address: 2 - 4 Westall Rd, Springfield		Lab Contact: Shirley LeCom				
GHD Contact Kory Auch		Contact Email kory.auch@ghd.com						
Standard TAT		Quote No./GHD Reference ME/124/18						
Sample ID	Date	Time	Composite Sample	Container	Analysis Requested			
			Empty Metal Vial A, B Type Description	Type	Volume (ml)			
			Preservative	Volume (ml)	HOLD			
			Analysis Requested	Metals Only	Analysis Requested			
55 NEL-LFB09_2.0m	10 July 2018		S	N	5.8 1.1 20	X	X	X
56 NEL-LFB09_3.0m	10 July 2018		S	N	5.8 1.1 20	X	X	X
57 NEL-LFB09_4.0m	10 July 2018		S	N	5.8 1.1 20	X	X	X
58 NEL-LFB10_0.1m	10 July 2018		S	N	5.8 1.1 20	X	X	X
59 NEL-LFB10_0.5m	10 July 2018		S	N	5.8 1.1 20	X	X	X
60 NEL-LFB10_2.0m	10 July 2018		S	N	5.8 1.1 20	X	X	X
61 NEL-LFB10_3.0m	10 July 2018		S	N	5.8 1.1 20	X	X	X
62 NEL-LFB10_4.0m	10 July 2018		S	N	5.8 1.1 20	X	X	X
63 NEL-LFB10_5.0m	10 July 2018		S	N	5.8 1.1 20	X	X	X
64 AC 3002	11 July 2018		S	N	5.8 1.1 20	X	X	X
65 AC 4002	11 July 2018		S	N	5.8 1.1 20	X	X	X
66 AC 3003	11 July 2018		S	N	5.8 1.1 20	X	X	X
67 AC 4003	11 July 2018		S	N	5.8 1.1 20	X	X	X
68 RB 306	10 July 2018		S	N	5.8 1.1 20	X	X	X
69 RB 306	10 July 2018		S	N	5.8 1.1 20	X	X	X
70 RB 307	11 July 2018		S	N	5.8 1.1 20	X	X	X
71 RB 307	11 July 2018		S	N	5.8 1.1 20	X	X	X
Sampled by Kory Auch / S-L		Date/Time 11/07/2018 @ 4.50		Relinquished by				
Received by		Date/Time		Relinquished by				
Received by, Count		Date/Time		Relinquished by				
Received by, Lab		Date/Time		Relinquished by				
Remarks Please CC reports and correspondence to Chris Dunn (chris.dunn@ghd.com) & GHD Lab Reps								

Send to Eurofins

Send to Eurofins
1WR6 water equivalent

55



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[illegible]

Ryan O'Donnell

To: Shirley LeCornu
Subject: RE: 31350060910 - NEL - Landfill Assessment COC

From: David Quinn [<mailto:David.Quinn@ghd.com>]
Sent: Thursday, 12 July 2018 5:30 PM
To: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Cc: Kory.Auch@ghd.com
Subject: 31350060910 - NEL - Landfill Assessment COC

Hi Shirley

Please see attached the completed COC for the batch of samples that Kory had sent to the lab today.

Let me know if you have any queries.

Thanks

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance

GHD

Proudly employee owned

T: +61 3 8687 8627 | M: +61 437 227 626 | V: 318 627 | E: david.quinn@ghd.com
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Shirley LeCornu

From: David Quinn <David.Quinn@ghd.com>
Sent: Friday, 13 July 2018 4:33 PM
To: Shirley LeCornu
Cc: Kory.Auch@ghd.com
Subject: RE: CoC for ALS Workorder : EM1811150 | Overall Description: North East Link - Landfill Assessment
Attachments: EM1811150_0_SRN_180713135215.pdf; EM1811150_COC_1.pdf

Hi Shirley

Can you please make a minor change to this work order:

- A full IWRG 621 suite is required on EM1811150-011 and EM1811150-062; and
- Change EM1811150-008 and EM1811150-061 to IWRG 621 METALS only

Thanks

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance

GHD

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From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Friday, 13 July 2018 2:02 PM
To: Kory Auch <Kory.Auch@ghd.com>
Subject: CoC for ALS Workorder : EM1811150 | Overall Description: North East Link - Landfill Assessment



**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1811150**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 5
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: KA		

Dates

Date Samples Received	: 12-Jul-2018 10:10	Issue Date	: 13-Jul-2018
Client Requested Due Date	: 20-Jul-2018	Scheduled Reporting Date	: 20-Jul-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 5.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 71 / 48

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB306	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB306	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
RB307	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB307	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB306	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB306	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
RB307	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB307	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB306	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB306	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
RB307	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered
FB307	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EA200 Asbestos Identification in Soils -	SOIL - P-16 IWRG 621	SOIL - P-16/1 IWRG 621 METALS
EM1811150-001	10-Jul-2018 00:00	NEL-LFB01_0.1m	✓				
EM1811150-002	11-Jul-2018 00:00	NEL-LFB01_0.5m		✓	✓		✓
EM1811150-003	11-Jul-2018 00:00	NEL-LFB01_1.0m		✓	✓	✓	
EM1811150-004	11-Jul-2018 00:00	NEL-LFB01_3.0m		✓		✓	
EM1811150-005	11-Jul-2018 00:00	NEL-LFB01_4.0m		✓			✓
EM1811150-006	11-Jul-2018 00:00	NEL-LFB01_5.0m	✓				
EM1811150-007	10-Jul-2018 00:00	NEL-LFB02_0.1m	✓				
EM1811150-008	11-Jul-2018 00:00	NEL-LFB02_0.5m		✓		✓	
EM1811150-009	11-Jul-2018 00:00	NEL-LFB02_1.0m		✓	✓		✓
EM1811150-010	11-Jul-2018 00:00	NEL-LFB02_2.0m		✓	✓	✓	
EM1811150-011	11-Jul-2018 00:00	NEL-LFB02_3.0m		✓			✓
EM1811150-012	11-Jul-2018 00:00	NEL-LFB02_4.0m	✓				
EM1811150-013	11-Jul-2018 00:00	NEL-LFB02_5.0m	✓				
EM1811150-014	10-Jul-2018 00:00	NEL-LFB03_0.1m	✓				
EM1811150-015	11-Jul-2018 00:00	NEL-LFB03_0.5m		✓			✓
EM1811150-016	11-Jul-2018 00:00	NEL-LFB03_1.0m		✓	✓	✓	
EM1811150-017	11-Jul-2018 00:00	NEL-LFB03_2.0m		✓	✓	✓	
EM1811150-018	11-Jul-2018 00:00	NEL-LFB03_3.0m		✓			✓
EM1811150-019	11-Jul-2018 00:00	NEL-LFB03_4.0m	✓				
EM1811150-020	11-Jul-2018 00:00	NEL-LFB03_5.0m	✓				
EM1811150-021	10-Jul-2018 00:00	NEL-LFB04_0.1m	✓				
EM1811150-022	11-Jul-2018 00:00	NEL-LFB04_0.5m		✓	✓	✓	
EM1811150-023	11-Jul-2018 00:00	NEL-LFB04_2.0m		✓	✓	✓	



			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EA200 Asbestos Identification in Soils -	SOIL - P-16 IWRG 621	SOIL - P-16/1 IWRG 621 METALS
EM1811150-024	11-Jul-2018 00:00	NEL-LFB04_3.0m		✓			✓
EM1811150-025	11-Jul-2018 00:00	NEL-LFB04_4.0m		✓			✓
EM1811150-026	11-Jul-2018 00:00	NEL-LFB04_5.0m	✓				
EM1811150-027	10-Jul-2018 00:00	NEL-LFB05_0.1m	✓				
EM1811150-028	11-Jul-2018 00:00	NEL-LFB05_0.5m		✓			✓
EM1811150-029	11-Jul-2018 00:00	NEL-LFB05_1.0m		✓	✓	✓	
EM1811150-030	11-Jul-2018 00:00	NEL-LFB05_2.0m		✓	✓		✓
EM1811150-031	11-Jul-2018 00:00	NEL-LFB05_3.0m		✓		✓	
EM1811150-032	11-Jul-2018 00:00	NEL-LFB05_4.0m	✓				
EM1811150-033	11-Jul-2018 00:00	NEL-LFB05_5.0m	✓				
EM1811150-034	10-Jul-2018 00:00	NEL-LFB06_0.1m		✓			✓
EM1811150-035	10-Jul-2018 00:00	NEL-LFB06_0.5m		✓	✓	✓	
EM1811150-036	10-Jul-2018 00:00	NEL-LFB06_2.0m		✓	✓	✓	
EM1811150-037	10-Jul-2018 00:00	NEL-LFB06_3.0m		✓			✓
EM1811150-038	10-Jul-2018 00:00	NEL-LFB06_4.0m	✓				
EM1811150-039	10-Jul-2018 00:00	NEL-LFB06_5.0m	✓				
EM1811150-040	10-Jul-2018 00:00	NEL-LFB07_0.1m	✓				
EM1811150-041	10-Jul-2018 00:00	NEL-LFB07_0.5m		✓	✓	✓	
EM1811150-042	10-Jul-2018 00:00	NEL-LFB07_2.0m		✓	✓	✓	
EM1811150-043	10-Jul-2018 00:00	NEL-LFB07_3.0m		✓			✓
EM1811150-044	10-Jul-2018 00:00	NEL-LFB07_4.0m		✓			✓
EM1811150-045	10-Jul-2018 00:00	NEL-LFB07_5.0m	✓				
EM1811150-046	10-Jul-2018 00:00	NEL-LFB08_0.1m	✓				
EM1811150-047	10-Jul-2018 00:00	NEL-LFB08_0.5m		✓	✓		✓
EM1811150-048	10-Jul-2018 00:00	NEL-LFB08_2.0m		✓	✓	✓	
EM1811150-049	10-Jul-2018 00:00	NEL-LFB08_3.0m		✓			✓
EM1811150-050	10-Jul-2018 00:00	NEL-LFB08_4.0m		✓		✓	
EM1811150-051	10-Jul-2018 00:00	NEL-LFB08_5.0m	✓				
EM1811150-052	10-Jul-2018 00:00	NEL-LFB09_0.1m	✓				
EM1811150-053	10-Jul-2018 00:00	NEL-LFB09_0.5m		✓		✓	
EM1811150-054	10-Jul-2018 00:00	NEL-LFB09_1.0m		✓	✓	✓	
EM1811150-055	10-Jul-2018 00:00	NEL-LFB09_2.0m		✓	✓		✓
EM1811150-056	10-Jul-2018 00:00	NEL-LFB09_3.0m		✓			✓
EM1811150-057	10-Jul-2018 00:00	NEL-LFB09_4.0m	✓				
EM1811150-058	10-Jul-2018 00:00	NEL-LFB10_0.1m	✓				
EM1811150-059	10-Jul-2018 00:00	NEL-LFB10_0.5m		✓	✓		✓
EM1811150-060	10-Jul-2018 00:00	NEL-LFB10_2.0m		✓	✓	✓	
EM1811150-061	10-Jul-2018 00:00	NEL-LFB10_3.0m		✓		✓	
EM1811150-062	10-Jul-2018 00:00	NEL-LFB10_4.0m		✓			✓
EM1811150-063	10-Jul-2018 00:00	NEL-LFB10_5.0m	✓				
EM1811150-064	11-Jul-2018 00:00	QC3002		✓		✓	



			(On Hold) SOIL No analysis requested				
			SOIL - EA055-103 Moisture Content				
			SOIL - EA200 Asbestos Identification in Soils -				
			SOIL - P-16 IWRG 621				
			SOIL - P-16/1 IWRG 621 METALS				
EM1811150-065	11-Jul-2018 00:00	QC3003		✓		✓	

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EG035F Dissolved Mercury
EM1811150-066	10-Jul-2018 00:00	RB306	✓	✓
EM1811150-067	10-Jul-2018 00:00	FB306	✓	✓
EM1811150-069	11-Jul-2018 00:00	RB307	✓	✓
EM1811150-070	11-Jul-2018 00:00	FB307	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PCT)	WATER - EK040-P Fluoride (PCT)	WATER - EP074 (water) Volatile Organic Compounds	WATER - W-11 OC/PCB	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
EM1811150-066	10-Jul-2018 00:00	RB306	✓	✓	✓	✓		✓
EM1811150-067	10-Jul-2018 00:00	FB306	✓	✓	✓	✓		✓
EM1811150-068	10-Jul-2018 00:00	TB306					✓	
EM1811150-069	11-Jul-2018 00:00	RB307	✓	✓	✓	✓		✓
EM1811150-070	11-Jul-2018 00:00	FB307	✓	✓	✓	✓		✓
EM1811150-071	11-Jul-2018 00:00	TB307					✓	

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✓ = Within holding time.

Method Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation



EA005-P: pH by PC Titrator							
FB306	Clear Plastic Bottle - Natural	----	10-Jul-2018	12-Jul-2018	✗	12-Jul-2018	✗
FB307	Clear Plastic Bottle - Natural	----	11-Jul-2018	12-Jul-2018	✗	12-Jul-2018	✗
RB306	Clear Plastic Bottle - Natural	----	10-Jul-2018	12-Jul-2018	✗	12-Jul-2018	✗
RB307	Clear Plastic Bottle - Natural	----	11-Jul-2018	12-Jul-2018	✗	12-Jul-2018	✗

Requested Deliverables

ACCOUNTS PAYABLE (Brisbane)

- A4 - AU Tax Invoice (INV)

Email ap-fss@ghd.com

ALL ACCOUNTS

- A4 - AU Tax Invoice (INV)

Email ap-fss@ghd.com

GHD LAB REPORTS

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESDat (ESRN_ESDAT)
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)

[illegible]

KORY AUCH

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- Chromatogram (CHROM)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESDat (ESRN_ESDAT)

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1811150	Page	: 1 of 31
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 12-Jul-2018
Order number	: ----	Date Analysis Commenced	: 13-Jul-2018
C-O-C number	: ----	Issue Date	: 20-Jul-2018
Sampler	: KA		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 71		
No. of samples analysed	: 48		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Team Leader - Asbestos	Melbourne Asbestos, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1802147)									
EM1811072-002	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	5.1	5.1	0.00	0% - 20%
EM1811150-048	NEL-LFB08_2.0m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.8	6.8	0.00	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1802149)									
EM1811123-016	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.8	7.8	0.00	0% - 20%
EM1811150-011	NEL-LFB02_3.0m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.4	6.3	1.57	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1799868)									
EM1811150-002	NEL-LFB01_0.5m	EA055: Moisture Content	----	0.1	%	13.9	14.2	1.90	0% - 50%
EM1811150-017	NEL-LFB03_2.0m	EA055: Moisture Content	----	0.1	%	16.2	13.6	17.1	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1799869)									
EM1811150-034	NEL-LFB06_0.1m	EA055: Moisture Content	----	0.1	%	16.5	15.0	9.55	0% - 50%
EM1811150-049	NEL-LFB08_3.0m	EA055: Moisture Content	----	0.1	%	13.7	13.4	1.82	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1799870)									
EM1811150-064	QC3002	EA055: Moisture Content	----	0.1	%	17.1	17.8	4.05	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1799402)									
EM1811150-016	NEL-LFB03_1.0m	EG005T: Lead	7439-92-1	5	mg/kg	48	76	44.9	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	504	463	8.46	0% - 20%
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	24	22	5.39	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	32	31	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	84	81	3.67	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1799402) - continued									
EM1811150-002	NEL-LFB01_0.5m	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	188	188	0.00	0% - 20%
EM1811150-016	NEL-LFB03_1.0m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	21	23	6.35	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	19	27.1	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1799404)									
EM1811150-034	NEL-LFB06_0.1m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	25	27	10.2	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	16	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	37	34	8.35	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	60	59	2.26	0% - 50%
EM1811150-048	NEL-LFB08_2.0m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	20	18	10.4	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	14	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	9	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	43	43	0.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1805757)									
EM1811150-064	QC3002	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	14	14	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	8	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	11	9.59	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1805757) - continued									
EM1811150-064	QC3002	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	30	31	0.00	No Limit
EM1811205-010	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	90	95	5.53	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	22	21	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	12	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	127	133	4.64	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1799403)									
EM1811150-002	NEL-LFB01_0.5m	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.00	No Limit
EM1811150-016	NEL-LFB03_1.0m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1799405)									
EM1811150-034	NEL-LFB06_0.1m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811150-048	NEL-LFB08_2.0m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1805756)									
EM1811150-064	QC3002	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811205-010	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1799408)									
EM1811150-003	NEL-LFB01_1.0m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811150-031	NEL-LFB05_3.0m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1799409)									
EM1811150-064	QC3002	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	0.6	<0.5	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1808525)									
EM1811150-011	NEL-LFB02_3.0m	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811345-015	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1809767)									
EM1811150-003	NEL-LFB01_1.0m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1811150-029	NEL-LFB05_1.0m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1809768)									
EM1811150-061	NEL-LFB10_3.0m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1811339-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1799395)									
EM1811150-003	NEL-LFB01_1.0m	EK040T: Fluoride	16984-48-8	40	mg/kg	290	290	0.00	No Limit
EM1811150-031	NEL-LFB05_3.0m	EK040T: Fluoride	16984-48-8	40	mg/kg	360	410	12.2	0% - 50%

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 Work Order : EM1811150
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK040T: Fluoride Total (QC Lot: 1799396)									
EM1811150-064	QC3002	EK040T: Fluoride	16984-48-8	40	mg/kg	310	400	26.1	No Limit
EK040T: Fluoride Total (QC Lot: 1802276)									
EM1811150-011	NEL-LFB02_3.0m	EK040T: Fluoride	16984-48-8	40	mg/kg	400	320	21.1	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1799390)									
EM1811150-003	NEL-LFB01_1.0m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811150-035	NEL-LFB06_0.5m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1805370)									
EM1811150-011	NEL-LFB02_3.0m	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1799377)									
EM1811150-003	NEL-LFB01_1.0m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811150-035	NEL-LFB06_0.5m	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1799379)									
EM1811150-064	QC3002	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1802107)									
EM1811150-011	NEL-LFB02_3.0m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074H: Naphthalene (QC Lot: 1799377)									
EM1811150-003	NEL-LFB01_1.0m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1811150-035	NEL-LFB06_0.5m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1799379)									
EM1811150-064	QC3002	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1802107)									
EM1811150-011	NEL-LFB02_3.0m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1799377)									
EM1811150-003	NEL-LFB01_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1811150-035	NEL-LFB06_0.5m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1799377) - continued									
EM1811150-035	NEL-LFB06_0.5m	EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1799379)									
EM1811150-064	QC3002	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1802107)									
EM1811150-011	NEL-LFB02_3.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1802107) - continued									
EM1811150-011	NEL-LFB02_3.0m	EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1799388)									
EM1811150-003	NEL-LFB01_1.0m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		0-2							
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
EM1811150-035	NEL-LFB06_0.5m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		0-2							
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1805368)									
EM1811150-011	NEL-LFB02_3.0m	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		0-2							
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1799388)									
EM1811150-003	NEL-LFB01_1.0m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1799388) - continued									
EM1811150-003	NEL-LFB01_1.0m	EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1811150-035	NEL-LFB06_0.5m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1805368)									
EM1811150-011	NEL-LFB02_3.0m	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1799388)									
EM1811150-003	NEL-LFB01_1.0m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1799388) - continued									
EM1811150-003	NEL-LFB01_1.0m	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811150-035	NEL-LFB06_0.5m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1805368)									
EM1811150-011	NEL-LFB02_3.0m	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1799388)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1799388) - continued									
EM1811150-003	NEL-LFB01_1.0m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1811150-035	NEL-LFB06_0.5m	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

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 Work Order : EM1811150
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1799377) - continued									
EM1811150-003	NEL-LFB01_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1811150-035	NEL-LFB06_0.5m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1799379)									
EM1811150-064	QC3002	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1799389)									
EM1811150-003	NEL-LFB01_1.0m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1811150-035	NEL-LFB06_0.5m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1802107)									
EM1811150-011	NEL-LFB02_3.0m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1805369)									
EM1811150-011	NEL-LFB02_3.0m	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1801889)									
EM1811147-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.25	7.64	5.28	0% - 20%
EM1811150-067	FB306	EA005-P: pH Value	----	0.01	pH Unit	5.92	5.83	1.53	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1801347)									
EM1811157-005	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.043	0.044	0.00	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.007	0.007	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1811150-066	RB306	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1801347) - continued									
EM1811150-066	RB306	EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1801349)									
EM1811150-066	RB306	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1801348)									
EM1811173-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1811150-066	RB306	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1801890)									
EM1811150-067	FB306	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1811185-009	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1801799)									
EM1811150-066	RB306	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1801799)									
EM1811150-066	RB306	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1801799)									
EM1811150-066	RB306	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1801799)									
EM1811150-066	RB306	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1801798)									

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 Work Order : EM1811150
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1801798) - continued									
EM1811192-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1811150-066	RB306	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1801798)									
EM1811192-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1811150-066	RB306	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1801798)									
EM1811192-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1811150-066	RB306	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1799402)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	92.7	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.8	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	85.5	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	89.5	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	102	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	95.6	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	102	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.5	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	94.7	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.3	82	111
EG005T: Total Metals by ICP-AES (QCLot: 1799404)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	92.1	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.6	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	86.3	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	89.4	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	102	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	96.2	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	102	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.6	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	89.7	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.6	82	111
EG005T: Total Metals by ICP-AES (QCLot: 1805757)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	91.1	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	85.2	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	90.4	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	92.8	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	102	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	97.1	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	106	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	91.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	93.0	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	101	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1799403)								
EG035T: Mercurv	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.1	77	104



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1799405)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	87.3	77	104
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1805756)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.2	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1799408)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	78.2	75	112
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1799409)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	84.5	75	112
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1808525)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	78.0	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1809767)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	97.0	80	110
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1809768)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	94.7	80	110
EK040T: Fluoride Total (QCLot: 1799395)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	82.0	75	110
EK040T: Fluoride Total (QCLot: 1799396)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	110	75	110
EK040T: Fluoride Total (QCLot: 1802276)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	110	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1799390)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	79.1	63	118
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1805370)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	79.8	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1799377)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	84.2	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	88.3	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	92.6	71	122
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	88.6	70	118
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	87.1	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	89.7	74	114
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1799379)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	76.9	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	82.6	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	79.5	71	122
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	77.3	70	118



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1799379) - continued								
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	82.2	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	82.3	74	114
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1802107)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	85.0	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	85.1	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	87.6	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	89.4	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	89.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	88.7	74	114
EP074H: Naphthalene (QCLot: 1799377)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	85.7	77	111
EP074H: Naphthalene (QCLot: 1799379)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	84.2	77	111
EP074H: Naphthalene (QCLot: 1802107)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	94.9	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1799377)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	85.6	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	80.9	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	78.0	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	73.6	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	81.2	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	80.3	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	89.9	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	85.0	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	93.6	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	80.6	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	85.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	97.8	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	98.3	70	119
EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	89.7	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	92.4	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	93.6	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	84.1	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	86.1	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	94.3	59	124
EP074I: Volatile Halogenated Compounds (QCLot: 1799379)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	49	133

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

CAS Number

LOR

Unit

Result

Concentration

LCS

Low

High

EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	77.5	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	86.3	68	107
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	77.7	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	78.0	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	82.1	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	83.4	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	80.0	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	109	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	80.0	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	106	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	78.2	64	124
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	93.6	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	83.8	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	72.3	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	81.0	73	117
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	77.4	69	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	81.1	75	114
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	71.8	59	124

EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	78.9	49	133
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	78.2	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	85.7	68	107
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	84.4	68	124
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	83.8	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	80.5	72	118
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	83.5	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	78.1	65	119
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	84.7	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	85.0	72	124
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	82.9	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	89.4	64	124
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	88.4	70	119
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	85.5	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	84.6	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	88.7	73	117
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	81.9	69	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	81.2	75	114
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	82.7	59	124

EP075A: Phenolic Compounds (Halogenated) (QCLot: 1799388)



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1799388) - continued								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	99.0	54	122
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	98.2	58	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	101	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	102	62	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	100	53	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	100	60	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	94.9	56	118
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	97.6	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	92.4	52	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1805368)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	104	54	122
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	90.9	58	131
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	106	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	80.5	62	129
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	81.9	53	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	84.4	60	126
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	96.3	56	118
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	95.6	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	86.2	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1799388)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	101	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	95.4	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	99.0	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	98.1	53	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	97.0	43	120
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	# 158	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	102	59	133
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	97.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	98.9	51	123
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	98.0	12	132
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1805368)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	107	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	95.9	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	96.8	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	99.9	53	130
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	80.1	43	120



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1805368) - continued								
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	# 134	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	86.8	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	105	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	104	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	102	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1799388)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	100	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	101	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	102	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	100	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	103	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	103	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	104	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	105	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	103	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	103	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	100	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	96.4	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	97.4	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	96.4	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	97.3	55	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1805368)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	98.9	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	98.7	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	77.9	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	96.9	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	99.8	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	99.5	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	97.9	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	98.1	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	94.1	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	94.1	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	102	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	99.6	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	105	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	103	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	106	55	137



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075I: Organochlorine Pesticides (QCLot: 1799388)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	98.8	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	99.3	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	101	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	99.4	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	104	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	101	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	102	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	102	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	102	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	102	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	104	63	136
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	104	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	104	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	88.9	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	107	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	103	66	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	104	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	102	63	139
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	100	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	100	61	136
EP075I: Organochlorine Pesticides (QCLot: 1805368)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	94.2	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	97.0	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	93.7	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	94.0	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	101	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	99.0	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	99.8	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	106	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	103	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	103	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	118	63	136
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	101	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	99.6	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	114	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	93.8	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	98.6	66	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	98.8	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	102	63	139



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075I: Organochlorine Pesticides (QCLot: 1805368) - continued								
EP075-EM: 4.4'-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	95.1	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	94.9	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1799377)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	79.8	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1799379)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	102	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1799389)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	99.2	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	110	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	103	77	116
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1802107)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	84.9	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1805369)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	85.0	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	89.1	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	85.1	77	116
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1799377)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	86.9	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1799379)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	99.9	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1799389)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	99.7	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	104	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	110	68	124
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1802107)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	85.8	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1805369)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	85.1	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	87.6	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	80.1	68	124



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit						
EG020F: Dissolved Metals by ICP-MS (QCLot: 1801347)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.6	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.1	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.8	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.1	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	99.6	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.4	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	98.3	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.5	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1801349)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	101	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1801348)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.8	81	114
EK040P: Fluoride by PC Titrator (QCLot: 1801890)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	99.6	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1799476)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	95.2	54	132
EP068A: Organochlorine Pesticides (OC) (QCLot: 1799477)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	96.6	51	122
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	87.8	51	118
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	100	57	119
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	97.6	51	121
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	100	58	114
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	103	47	113
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	99.0	53	118
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	101	53	117
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	100	50	126
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	98.9	55	121
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	101	54	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	100	50	121
EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	99.9	54	120
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	121	45	122
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	100	55	120
EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	103	53	126
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	104	52	123
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	104	48	121
EP068: 4,4'-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	112	46	120
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	98.9	56	118



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP068A: Organochlorine Pesticides (OC) (QCLot: 1799477) - continued								
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	118	42	123
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1801799)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	103	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1801799)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	90.5	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	94.7	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	108	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	95.6	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	104	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	92.0	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	88.4	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	102	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	97.2	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	97.9	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	95.6	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	92.4	75	112
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	100	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	106	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1801799)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	98.7	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	108	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	103	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	108	62	119
EP074G: Trihalomethanes (QCLot: 1801799)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	99.4	79	119
EP075(SIM)A: Phenolic Compounds (QCLot: 1799474)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	34.5	20	49
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	82.8	46	103
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	77.5	43	98
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	71.3	41	92
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	91.1	44	114
EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	98.6	43	115
EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	90.3	48	111
EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	91.0	50	116
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	93.8	49	110
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	92.3	48	113
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	92.4	47	115
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	95.8	48	130



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1799474)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	86.6	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	88.6	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	91.2	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	93.4	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	94.5	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	112	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	98.0	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	95.8	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	98.3	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	96.4	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	99.0	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	102	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	101	56	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	97.2	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	95.1	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	97.3	53	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1799475)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	108	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	110	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	110	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1801798)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	86.6	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1799475)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	108	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	109	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	110	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1801798)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	83.9	66	123
EP080: BTEXN (QCLot: 1801798)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	95.2	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	95.1	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	95.5	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	99.0	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	106	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	92.7	74	124



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1799408) - continued							
EM1811150-004	NEL-LFB01_3.0m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	63.0	58	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1799409)							
EM1811150-065	QC3003	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	79.0	58	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1808525)							
EM1811150-062	NEL-LFB10_4.0m	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	102	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1809767)							
EM1811150-004	NEL-LFB01_3.0m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	108	77	113
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1809768)							
EM1811150-062	NEL-LFB10_4.0m	EK026SF: Total Cyanide	57-12-5	20 mg/kg	96.0	77	113
EK040T: Fluoride Total (QCLot: 1799395)							
EM1811150-004	NEL-LFB01_3.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	82.0	70	130
EK040T: Fluoride Total (QCLot: 1799396)							
EM1811150-065	QC3003	EK040T: Fluoride	16984-48-8	400 mg/kg	77.2	70	130
EK040T: Fluoride Total (QCLot: 1802276)							
EM1811150-062	NEL-LFB10_4.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	129	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1799390)							
EM1811150-010	NEL-LFB02_2.0m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	77.4	36	152
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1805370)							
EM1811150-065	QC3003	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	71.2	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1799377)							
EM1811150-004	NEL-LFB01_3.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	93.2	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	85.5	56	134
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1799379)							
EM1811150-065	QC3003	EP074-UT: Benzene	71-43-2	2 mg/kg	75.6	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	69.9	56	134
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1802107)							
EM1811150-062	NEL-LFB10_4.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	90.8	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	77.5	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1799377)							
EM1811150-004	NEL-LFB01_3.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	79.0	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	82.9	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	89.0	28	134
EP074I: Volatile Halogenated Compounds (QCLot: 1799379)							
EM1811150-065	QC3003	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	67.8	26	141

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074I: Volatile Halogenated Compounds (QCLOT: 1799379) - continued							
EM1811150-065	QC3003	EP074-UT: Trichloroethene	79-01-6	2 mg/kg	69.5	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	75.6	28	134
EP074I: Volatile Halogenated Compounds (QCLOT: 1802107)							
EM1811150-062	NEL-LFB10_4.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	72.0	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	77.1	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	101	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLOT: 1799388)							
EM1811150-004	NEL-LFB01_3.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	102	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	76.2	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	42.2	10	144
EP075A: Phenolic Compounds (Halogenated) (QCLOT: 1805368)							
EM1811150-062	NEL-LFB10_4.0m	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	97.4	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	78.6	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	37.8	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLOT: 1799388)							
EM1811150-004	NEL-LFB01_3.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	81.6	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	77.3	13	129
EP075A: Phenolic Compounds (Non-halogenated) (QCLOT: 1805368)							
EM1811150-062	NEL-LFB10_4.0m	EP075-EM: Phenol	108-95-2	1 mg/kg	85.1	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	72.5	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLOT: 1799388)							
EM1811150-004	NEL-LFB01_3.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	103	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	77.8	27	169
EP075B: Polynuclear Aromatic Hydrocarbons (QCLOT: 1805368)							
EM1811150-062	NEL-LFB10_4.0m	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	98.3	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	95.1	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLOT: 1799377)							
EM1811150-004	NEL-LFB01_3.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	70.8	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLOT: 1799379)							
EM1811150-065	QC3003	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	67.7	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLOT: 1799389)							
EM1811150-008	NEL-LFB02_0.5m	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	97.4	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	104	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	94.5	64	118
EP080/071: Total Petroleum Hydrocarbons (QCLOT: 1802107)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1802107) - continued							
EM1811150-062	NEL-LFB10_4.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	59.9	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1805369)							
EM1811150-064	QC3002	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	83.2	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	86.8	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	82.4	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1799377)							
EM1811150-004	NEL-LFB01_3.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	71.4	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1799379)							
EM1811150-065	QC3003	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	68.9	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1799389)							
EM1811150-008	NEL-LFB02_0.5m	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	96.4	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	97.4	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	94.0	44	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1802107)							
EM1811150-062	NEL-LFB10_4.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	61.3	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1805369)							
EM1811150-064	QC3002	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	83.1	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	85.1	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	77.9	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1801347)							
EM1811150-066	RB306	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	103	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	86.6	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	86.8	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	89.8	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	94.1	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	100	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1801348)							
EM1811150-066	RB306	EG035F: Mercury	7439-97-6	0.01 mg/L	106	70	120
EK040P: Fluoride by PC Titrator (QCLot: 1801890)							
EM1811150-069	RB307	EK040P: Fluoride	16984-48-8	5 mg/L	106	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1801799)							
EM1811213-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	90.2	40	124

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 Work Order : EM1811150
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 1801799) - continued							
EM1811213-001	Anonymous	EP074: Trichloroethene	79-01-6	20 µg/L	85.3	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1801799)							
EM1811213-001	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	95.7	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1801798)							
EM1811213-001	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	82.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1801798)							
EM1811213-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	80.3	44	122
EP080: BTEXN (QCLot: 1801798)							
EM1811213-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	98.7	68	130
		EP080: Toluene	108-88-3	20 µg/L	100	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1811150**

Page : 1 of 21

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **KORY AUCH**

Telephone : +61-3-8549 9630

Project : 31350060910

Date Samples Received : 12-Jul-2018

Site : ----

Issue Date : 20-Jul-2018

Sampler : KA

No. of samples received : 71

Order number :

No. of samples analysed : 48

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Matrix Spike outliers occur.
- Laboratory Control outliers exist - please see following pages for full details.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075A: Phenolic Compounds (Non-halogenated)	QC-1799388-001	----	2,4-Dinitrophenol	51-28-5	158 %	23-125%	Recovery greater than upper control limit
EP075A: Phenolic Compounds (Non-halogenated)	QC-1805368-001	----	2,4-Dinitrophenol	51-28-5	134 %	23-125%	Recovery greater than upper control limit

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075T: Base/Neutral Extractable Surrogates (Waste C	EM1811150-023	NEL-LFB04_2.0m	Nitrobenzene-D5	4165-60-0	126 %	29-125 %	Recovery greater than upper data quality objective
EP075T: Base/Neutral Extractable Surrogates (Waste C	EM1811150-064	QC3002	2-Fluorobiphenyl	321-60-8	154 %	44-136 %	Recovery greater than upper data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method			Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural								
RB306,	FB306		----	----	----	16-Jul-2018	10-Jul-2018	6
Clear Plastic Bottle - Natural								
RB307,	FB307		----	----	----	16-Jul-2018	11-Jul-2018	5

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	8	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	8	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)		10-Jul-2018	16-Jul-2018	17-Jul-2018	✓	16-Jul-2018	16-Jul-2018	✓
NEL-LFB06_0.5m,	NEL-LFB06_2.0m,							
NEL-LFB07_0.5m,	NEL-LFB07_2.0m,							
NEL-LFB08_2.0m,	NEL-LFB08_4.0m,							
NEL-LFB09_0.5m,	NEL-LFB09_1.0m,							
NEL-LFB10_2.0m,	NEL-LFB10_4.0m							
Soil Glass Jar - Unpreserved (EA001)		11-Jul-2018	16-Jul-2018	18-Jul-2018	✓	16-Jul-2018	16-Jul-2018	✓
NEL-LFB01_1.0m,	NEL-LFB01_3.0m,							
NEL-LFB02_2.0m,	NEL-LFB02_3.0m,							
NEL-LFB03_1.0m,	NEL-LFB03_2.0m,							
NEL-LFB04_0.5m,	NEL-LFB04_2.0m,							
NEL-LFB05_1.0m,	NEL-LFB05_3.0m,							
QC3002,	QC3003							

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		10-Jul-2018	----	----	----	13-Jul-2018	24-Jul-2018	✓
NEL-LFB06_0.1m,	NEL-LFB06_0.5m,							
NEL-LFB06_2.0m,	NEL-LFB06_3.0m,							
NEL-LFB07_0.5m,	NEL-LFB07_2.0m,							
NEL-LFB07_3.0m,	NEL-LFB07_4.0m,							
NEL-LFB08_0.5m,	NEL-LFB08_2.0m,							
NEL-LFB08_3.0m,	NEL-LFB08_4.0m,							
NEL-LFB09_0.5m,	NEL-LFB09_1.0m,							
NEL-LFB09_2.0m,	NEL-LFB09_3.0m,							
NEL-LFB10_0.5m,	NEL-LFB10_2.0m,							
NEL-LFB10_3.0m,	NEL-LFB10_4.0m							
Soil Glass Jar - Unpreserved (EA055)		11-Jul-2018	----	----	----	13-Jul-2018	25-Jul-2018	✓
NEL-LFB01_0.5m,	NEL-LFB01_1.0m,							
NEL-LFB01_3.0m,	NEL-LFB01_4.0m,							
NEL-LFB02_0.5m,	NEL-LFB02_1.0m,							
NEL-LFB02_2.0m,	NEL-LFB02_3.0m,							
NEL-LFB03_0.5m,	NEL-LFB03_1.0m,							
NEL-LFB03_2.0m,	NEL-LFB03_3.0m,							
NEL-LFB04_0.5m,	NEL-LFB04_2.0m,							
NEL-LFB04_3.0m,	QC3002, NEL-LFB04_4.0m,							
NEL-LFB05_0.5m,	NEL-LFB05_1.0m,							
NEL-LFB05_2.0m,	NEL-LFB05_3.0m,							
QC3003								
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag: Separate bag received (EA200)		10-Jul-2018	----	----	----	13-Jul-2018	06-Jan-2019	✓
NEL-LFB06_0.5m,	NEL-LFB06_2.0m,							
NEL-LFB07_0.5m,	NEL-LFB07_2.0m,							
NEL-LFB08_0.5m,	NEL-LFB08_2.0m,							
NEL-LFB09_1.0m,	NEL-LFB09_2.0m,							
NEL-LFB10_0.5m,	NEL-LFB10_2.0m							
Snap Lock Bag: Separate bag received (EA200)		11-Jul-2018	----	----	----	13-Jul-2018	07-Jan-2019	✓
NEL-LFB01_0.5m,	NEL-LFB01_1.0m,							
NEL-LFB02_1.0m,	NEL-LFB02_2.0m,							
NEL-LFB03_1.0m,	NEL-LFB03_2.0m,							
NEL-LFB04_0.5m,	NEL-LFB04_2.0m,							
NEL-LFB05_1.0m,	NEL-LFB05_2.0m							

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)		10-Jul-2018	17-Jul-2018	06-Jan-2019	✓	17-Jul-2018	06-Jan-2019	✓
NEL-LFB06_0.1m,	NEL-LFB06_0.5m,							
NEL-LFB06_2.0m,	NEL-LFB06_3.0m,							
NEL-LFB07_0.5m,	NEL-LFB07_2.0m,							
NEL-LFB07_3.0m,	NEL-LFB07_4.0m,							
NEL-LFB08_0.5m,	NEL-LFB08_2.0m,							
NEL-LFB08_3.0m,	NEL-LFB08_4.0m,							
NEL-LFB09_0.5m,	NEL-LFB09_1.0m,							
NEL-LFB09_2.0m,	NEL-LFB09_3.0m,							
NEL-LFB10_0.5m,	NEL-LFB10_2.0m,							
NEL-LFB10_3.0m,	NEL-LFB10_4.0m,							
Soil Glass Jar - Unpreserved (EG005T)		11-Jul-2018	17-Jul-2018	07-Jan-2019	✓	17-Jul-2018	07-Jan-2019	✓
NEL-LFB01_0.5m,	NEL-LFB01_1.0m,							
NEL-LFB01_3.0m,	NEL-LFB01_4.0m,							
NEL-LFB02_0.5m,	NEL-LFB02_1.0m,							
NEL-LFB02_2.0m,	NEL-LFB02_3.0m,							
NEL-LFB03_0.5m,	NEL-LFB03_1.0m,							
NEL-LFB03_2.0m,	NEL-LFB03_3.0m,							
NEL-LFB04_0.5m,	NEL-LFB04_2.0m,							
NEL-LFB04_3.0m,	QC3002, NEL-LFB04_4.0m,							
NEL-LFB05_0.5m,	NEL-LFB05_1.0m,							
NEL-LFB05_2.0m,	NEL-LFB05_3.0m,							
QC3003								

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)		10-Jul-2018	17-Jul-2018	07-Aug-2018	✓	19-Jul-2018	07-Aug-2018	✓
NEL-LFB06_0.1m,	NEL-LFB06_0.5m,							
NEL-LFB06_2.0m,	NEL-LFB06_3.0m,							
NEL-LFB07_0.5m,	NEL-LFB07_2.0m,							
NEL-LFB07_3.0m,	NEL-LFB07_4.0m,							
NEL-LFB08_0.5m,	NEL-LFB08_2.0m,							
NEL-LFB08_3.0m,	NEL-LFB08_4.0m,							
NEL-LFB09_0.5m,	NEL-LFB09_1.0m,							
NEL-LFB09_2.0m,	NEL-LFB09_3.0m,							
NEL-LFB10_0.5m,	NEL-LFB10_2.0m,							
NEL-LFB10_3.0m,	NEL-LFB10_4.0m							
Soil Glass Jar - Unpreserved (EG035T)		11-Jul-2018	17-Jul-2018	08-Aug-2018	✓	19-Jul-2018	08-Aug-2018	✓
NEL-LFB01_0.5m,	NEL-LFB01_1.0m,							
NEL-LFB01_3.0m,	NEL-LFB01_4.0m,							
NEL-LFB02_0.5m,	NEL-LFB02_1.0m,							
NEL-LFB02_2.0m,	NEL-LFB02_3.0m,							
NEL-LFB03_0.5m,	NEL-LFB03_1.0m,							
NEL-LFB03_2.0m,	NEL-LFB03_3.0m,							
NEL-LFB04_0.5m,	NEL-LFB04_2.0m,							
NEL-LFB04_3.0m,	QC3002, NEL-LFB04_4.0m,							
NEL-LFB05_0.5m,	NEL-LFB05_1.0m,							
NEL-LFB05_2.0m,	NEL-LFB05_3.0m,							
QC3003								
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)		10-Jul-2018	17-Jul-2018	07-Aug-2018	✓	18-Jul-2018	24-Jul-2018	✓
NEL-LFB06_0.5m,	NEL-LFB06_2.0m,							
NEL-LFB07_0.5m,	NEL-LFB07_2.0m,							
NEL-LFB08_2.0m,	NEL-LFB08_4.0m,							
NEL-LFB09_0.5m,	NEL-LFB09_1.0m,							
NEL-LFB10_2.0m								
Soil Glass Jar - Unpreserved (EG048G)		10-Jul-2018	18-Jul-2018	07-Aug-2018	✓	18-Jul-2018	25-Jul-2018	✓
NEL-LFB10_4.0m								
Soil Glass Jar - Unpreserved (EG048G)		11-Jul-2018	17-Jul-2018	08-Aug-2018	✓	18-Jul-2018	24-Jul-2018	✓
NEL-LFB01_1.0m,	NEL-LFB01_3.0m,							
NEL-LFB02_2.0m,	NEL-LFB03_1.0m,							
NEL-LFB03_2.0m,	NEL-LFB04_0.5m,							
NEL-LFB04_2.0m,	NEL-LFB05_1.0m,							
NEL-LFB05_3.0m,	QC3002,							
QC3003								
Soil Glass Jar - Unpreserved (EG048G)		11-Jul-2018	18-Jul-2018	08-Aug-2018	✓	18-Jul-2018	25-Jul-2018	✓
NEL-LFB02_3.0m								



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)		10-Jul-2018	18-Jul-2018	24-Jul-2018	✔	19-Jul-2018	01-Aug-2018	✔
NEL-LFB06_0.5m,	NEL-LFB06_2.0m,							
NEL-LFB07_0.5m,	NEL-LFB07_2.0m,							
NEL-LFB08_2.0m,	NEL-LFB08_4.0m,							
NEL-LFB09_0.5m,	NEL-LFB09_1.0m,							
NEL-LFB10_2.0m,	NEL-LFB10_4.0m							
Soil Glass Jar - Unpreserved (EK026SF)		11-Jul-2018	18-Jul-2018	25-Jul-2018	✔	19-Jul-2018	01-Aug-2018	✔
NEL-LFB01_1.0m,	NEL-LFB01_3.0m,							
NEL-LFB02_2.0m,	NEL-LFB02_3.0m,							
NEL-LFB03_1.0m,	NEL-LFB03_2.0m,							
NEL-LFB04_0.5m,	NEL-LFB04_2.0m,							
NEL-LFB05_1.0m,	NEL-LFB05_3.0m,							
QC3002,	QC3003							
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)		10-Jul-2018	13-Jul-2018	07-Aug-2018	✔	17-Jul-2018	07-Aug-2018	✔
NEL-LFB06_0.5m,	NEL-LFB06_2.0m,							
NEL-LFB07_0.5m,	NEL-LFB07_2.0m,							
NEL-LFB08_2.0m,	NEL-LFB08_4.0m,							
NEL-LFB09_0.5m,	NEL-LFB09_1.0m,							
NEL-LFB10_2.0m								
Soil Glass Jar - Unpreserved (EK040T)		10-Jul-2018	16-Jul-2018	07-Aug-2018	✔	17-Jul-2018	07-Aug-2018	✔
NEL-LFB10_4.0m								
Soil Glass Jar - Unpreserved (EK040T)		11-Jul-2018	13-Jul-2018	08-Aug-2018	✔	17-Jul-2018	08-Aug-2018	✔
NEL-LFB01_1.0m,	NEL-LFB01_3.0m,							
NEL-LFB02_2.0m,	NEL-LFB03_1.0m,							
NEL-LFB03_2.0m,	NEL-LFB04_0.5m,							
NEL-LFB04_2.0m,	NEL-LFB05_1.0m,							
NEL-LFB05_3.0m,	QC3002,							
QC3003								
Soil Glass Jar - Unpreserved (EK040T)		11-Jul-2018	16-Jul-2018	08-Aug-2018	✔	17-Jul-2018	08-Aug-2018	✔
NEL-LFB02_3.0m								



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP066-EM) NEL-LFB10_4.0m		10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP066-EM) NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP066-EM) NEL-LFB02_3.0m, QC3003	QC3002,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	13-Jul-2018	17-Jul-2018	✔	14-Jul-2018	17-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB10_4.0m		10-Jul-2018	16-Jul-2018	17-Jul-2018	✔	16-Jul-2018	17-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m, QC3003	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m, QC3002,	11-Jul-2018	13-Jul-2018	18-Jul-2018	✔	14-Jul-2018	18-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB02_3.0m		11-Jul-2018	16-Jul-2018	18-Jul-2018	✔	16-Jul-2018	18-Jul-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	13-Jul-2018	17-Jul-2018	✔	14-Jul-2018	17-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB10_4.0m		10-Jul-2018	16-Jul-2018	17-Jul-2018	✔	16-Jul-2018	17-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m, QC3003	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m, QC3002,	11-Jul-2018	13-Jul-2018	18-Jul-2018	✔	14-Jul-2018	18-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB02_3.0m		11-Jul-2018	16-Jul-2018	18-Jul-2018	✔	16-Jul-2018	18-Jul-2018	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	13-Jul-2018	17-Jul-2018	✔	14-Jul-2018	17-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB10_4.0m		10-Jul-2018	16-Jul-2018	17-Jul-2018	✔	16-Jul-2018	17-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m, QC3003	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m, QC3002,	11-Jul-2018	13-Jul-2018	18-Jul-2018	✔	14-Jul-2018	18-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB02_3.0m		11-Jul-2018	16-Jul-2018	18-Jul-2018	✔	16-Jul-2018	18-Jul-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB10_4.0m		10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB02_3.0m, QC3003	QC3002,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB10_4.0m		10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB02_3.0m, QC3003	QC3002,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB10_4.0m		10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB02_3.0m, QC3003	QC3002,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB10_4.0m		10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-LFB02_3.0m, QC3003	QC3002,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	13-Jul-2018	17-Jul-2018	✔	14-Jul-2018	17-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB10_4.0m		10-Jul-2018	16-Jul-2018	17-Jul-2018	✔	16-Jul-2018	17-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-LFB10_4.0m		10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m, QC3003	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m, QC3002,	11-Jul-2018	13-Jul-2018	18-Jul-2018	✔	14-Jul-2018	18-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-LFB02_3.0m		11-Jul-2018	16-Jul-2018	18-Jul-2018	✔	16-Jul-2018	18-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-LFB02_3.0m, QC3003	QC3002,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	13-Jul-2018	17-Jul-2018	✔	14-Jul-2018	17-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-LFB10_4.0m		10-Jul-2018	16-Jul-2018	17-Jul-2018	✔	16-Jul-2018	17-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-LFB06_0.5m, NEL-LFB07_0.5m, NEL-LFB08_2.0m, NEL-LFB09_0.5m, NEL-LFB10_2.0m	NEL-LFB06_2.0m, NEL-LFB07_2.0m, NEL-LFB08_4.0m, NEL-LFB09_1.0m,	10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-LFB10_4.0m		10-Jul-2018	17-Jul-2018	24-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m, QC3003	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m, QC3002, QC3003	11-Jul-2018	13-Jul-2018	18-Jul-2018	✔	14-Jul-2018	18-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-LFB02_3.0m		11-Jul-2018	16-Jul-2018	18-Jul-2018	✔	16-Jul-2018	18-Jul-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_2.0m, NEL-LFB04_2.0m, NEL-LFB05_3.0m	NEL-LFB01_3.0m, NEL-LFB03_1.0m, NEL-LFB04_0.5m, NEL-LFB05_1.0m,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-LFB02_3.0m, QC3003	QC3002,	11-Jul-2018	17-Jul-2018	25-Jul-2018	✔	18-Jul-2018	26-Aug-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
RB306,	FB306	10-Jul-2018	----	----	----	16-Jul-2018	10-Jul-2018	✖
Clear Plastic Bottle - Natural (EA005-P)								
RB307,	FB307	11-Jul-2018	----	----	----	16-Jul-2018	11-Jul-2018	✖



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Natural (EG020B-F) RB306,	FB306	10-Jul-2018	----	----	----	16-Jul-2018	06-Jan-2019	✓
Clear Plastic Bottle - Natural (EG020B-F) RB307,	FB307	11-Jul-2018	----	----	----	16-Jul-2018	07-Jan-2019	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F) RB306,	FB306	10-Jul-2018	----	----	----	16-Jul-2018	07-Aug-2018	✓
Clear Plastic Bottle - Natural (EG035F) RB307,	FB307	11-Jul-2018	----	----	----	16-Jul-2018	08-Aug-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB306,	FB306	10-Jul-2018	----	----	----	16-Jul-2018	07-Aug-2018	✓
Clear Plastic Bottle - Natural (EK040P) RB307,	FB307	11-Jul-2018	----	----	----	16-Jul-2018	08-Aug-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB306,	FB306	10-Jul-2018	13-Jul-2018	17-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
Amber Glass Bottle - Unpreserved (EP066) RB307,	FB307	11-Jul-2018	13-Jul-2018	18-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
EP068A: Organochlorine Pesticides (OC)								
Amber Glass Bottle - Unpreserved (EP068) RB306,	FB306	10-Jul-2018	13-Jul-2018	17-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
Amber Glass Bottle - Unpreserved (EP068) RB307,	FB307	11-Jul-2018	13-Jul-2018	18-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB306,	FB306	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP074) RB307,	FB307	11-Jul-2018	16-Jul-2018	25-Jul-2018	✓	17-Jul-2018	25-Jul-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB306,	FB306	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP074) RB307,	FB307	11-Jul-2018	16-Jul-2018	25-Jul-2018	✓	17-Jul-2018	25-Jul-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB306,	FB306	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP074) RB307,	FB307	11-Jul-2018	16-Jul-2018	25-Jul-2018	✓	17-Jul-2018	25-Jul-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB306,	FB306	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP074) RB307,	FB307	11-Jul-2018	16-Jul-2018	25-Jul-2018	✓	17-Jul-2018	25-Jul-2018	✓
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB306,	FB306	10-Jul-2018	13-Jul-2018	17-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB307,	FB307	11-Jul-2018	13-Jul-2018	18-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB306,	FB306	10-Jul-2018	13-Jul-2018	17-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB307,	FB307	11-Jul-2018	13-Jul-2018	18-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) RB306,	FB306	10-Jul-2018	13-Jul-2018	17-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
Amber Glass Bottle - Unpreserved (EP071) RB307,	FB307	11-Jul-2018	13-Jul-2018	18-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB306, TB306	FB306,	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB307, TB307	FB307,	11-Jul-2018	16-Jul-2018	25-Jul-2018	✓	17-Jul-2018	25-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) RB306,	FB306	10-Jul-2018	13-Jul-2018	17-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
Amber Glass Bottle - Unpreserved (EP071) RB307,	FB307	11-Jul-2018	13-Jul-2018	18-Jul-2018	✓	16-Jul-2018	22-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB306, TB306	FB306,	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB307, TB307	FB307,	11-Jul-2018	16-Jul-2018	25-Jul-2018	✓	17-Jul-2018	25-Jul-2018	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) RB306, TB306	FB306,	10-Jul-2018	16-Jul-2018	24-Jul-2018	✓	17-Jul-2018	24-Jul-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB307, TB307	FB307,	11-Jul-2018	16-Jul-2018	25-Jul-2018	✓	17-Jul-2018	25-Jul-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **✖** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	5	41	12.20	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	5	42	11.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	3	27	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	3	27	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	6	60	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	7	60	11.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	3	27	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	6	41	14.63	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	3	32	9.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	3	30	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	3	41	7.32	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	3	32	9.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	3	30	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	3	41	7.32	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	3	32	9.38	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	60	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	60	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	3	30	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	5	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	6	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	8	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
TRH - Semivolatile Fraction	EP071	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	5	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	8	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Certificate of Analysis

GHD Melbourne
Level 8, 180 Lonsdale St
Melbourne
VIC 3000



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Accreditation Number 1261
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The results of the tests, calibrations and/or
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to Australian/national standards.

Attention: **Kory Auch**

Report **607608-S**
Project name **NORTH EAST LINK - LANDFILL ASSESSMENT**
Project ID **31/350060910**
Received Date **Jul 13, 2018**

Client Sample ID			QC4002	QC4003
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			M18-JI16140	M18-JI16141
Date Sampled			Jul 11, 2018	Jul 11, 2018
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50
Volatile Organics				
1.1-Dichloroethane	0.5	mg/kg	< 0.5	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5	< 0.5
Hexachlorobutadiene	0.5	mg/kg	< 0.5	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	< 0.5
Allyl chloride	0.5	mg/kg	< 0.5	< 0.5
Benzene	0.1	mg/kg	< 0.1	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5	< 0.5
Bromochloromethane	0.5	mg/kg	< 0.5	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5	< 0.5
Bromoform	0.5	mg/kg	< 0.5	< 0.5
Bromomethane	0.5	mg/kg	< 0.5	< 0.5

Client Sample ID			QC4002	QC4003
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			M18-JI16140	M18-JI16141
Date Sampled			Jul 11, 2018	Jul 11, 2018
Test/Reference	LOR	Unit		
Volatile Organics				
Carbon disulfide	0.5	mg/kg	< 0.5	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5	< 0.5
Chloroethane	0.5	mg/kg	< 0.5	< 0.5
Chloroform	0.5	mg/kg	< 0.5	< 0.5
Chloromethane	0.5	mg/kg	< 0.5	< 0.5
cis-1,2-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5
cis-1,3-Dichloropropene	0.5	mg/kg	< 0.5	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
Iodomethane	0.5	mg/kg	< 0.5	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5	< 0.5
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Styrene	0.5	mg/kg	< 0.5	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5	< 0.5
Toluene	0.1	mg/kg	< 0.1	< 0.1
trans-1,2-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5
trans-1,3-Dichloropropene	0.5	mg/kg	< 0.5	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5	< 0.5
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
Total MAH*	0.5	mg/kg	< 0.5	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5	< 0.5
4-Bromofluorobenzene (surr.)	1	%	88	95
Toluene-d8 (surr.)	1	%	95	98
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5

Client Sample ID			QC4002	QC4003
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			M18-JI16140	M18-JI16141
Date Sampled			Jul 11, 2018	Jul 11, 2018
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	68	65
p-Terphenyl-d14 (surr.)	1	%	75	75
Organochlorine Pesticides				
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1
Dibutylchlorobenzene (surr.)	1	%	137	135
Tetrachloro-m-xylene (surr.)	1	%	131	142
Polychlorinated Biphenyls				
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1

Client Sample ID			QC4002	QC4003
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			M18-JI16140	M18-JI16141
Date Sampled			Jul 11, 2018	Jul 11, 2018
Test/Reference	LOR	Unit		
Polychlorinated Biphenyls				
Total PCB*	0.1	mg/kg	< 0.1	< 0.1
Dibutylchloroendate (surr.)	1	%	137	135
Tetrachloro-m-xylene (surr.)	1	%	131	142
Phenols (Halogenated)				
2-Chlorophenol	0.5	mg/kg	< 0.5	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	< 1	< 1
2,4,6-Trichlorophenol	1.0	mg/kg	< 1	< 1
2,6-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5
4-Chloro-3-methylphenol	1.0	mg/kg	< 1	< 1
Pentachlorophenol	1.0	mg/kg	< 1	< 1
Tetrachlorophenols - Total	1.0	mg/kg	< 1	< 1
Total Halogenated Phenol*	1	mg/kg	< 1	< 1
Phenols (non-Halogenated)				
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	< 20	< 20
2-Methyl-4,6-dinitrophenol	5	mg/kg	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	< 0.2
2-Nitrophenol	1.0	mg/kg	< 1	< 1
2,4-Dimethylphenol	0.5	mg/kg	< 0.5	< 0.5
2,4-Dinitrophenol	5	mg/kg	< 5	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	< 0.4
4-Nitrophenol	5	mg/kg	< 5	< 5
Dinoseb	20	mg/kg	< 20	< 20
Phenol	0.5	mg/kg	< 0.5	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20	< 20
Phenol-d6 (surr.)	1	%	67	56
Chromium (hexavalent)	1	mg/kg	< 1	< 1
Cyanide (total)	5	mg/kg	< 5	< 5
Fluoride	100	mg/kg	360	360
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	8.4	7.8
% Moisture	1	%	16	14
Heavy Metals				
Arsenic	2	mg/kg	< 2	8.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	39	48
Copper	5	mg/kg	9.1	17
Lead	5	mg/kg	14	21
Mercury	0.1	mg/kg	< 0.1	< 0.1
Molybdenum	5	mg/kg	< 5	< 5
Nickel	5	mg/kg	16	27
Selenium	2	mg/kg	< 2	< 2
Silver	0.2	mg/kg	< 0.2	< 0.2
Tin	10	mg/kg	< 10	< 10
Zinc	5	mg/kg	31	47

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Vic EPA IWRG 621 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Jul 14, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
Volatile Organics	Melbourne	Jul 14, 2018	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jul 14, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jul 14, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Jul 14, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	Jul 14, 2018	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Melbourne	Jul 14, 2018	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Phenols (Halogenated)	Melbourne	Jul 14, 2018	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Jul 14, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Chromium (hexavalent)	Melbourne	Jul 14, 2018	28 Day
- Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)			
Cyanide (total)	Melbourne	Jul 14, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride	Melbourne	Jul 16, 2018	28 Day
- Method: LTM-INO-4150 Determination of Total Fluoride PART A – CIC			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	Jul 14, 2018	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Metals IWRG 621 : Metals M12	Melbourne	Jul 14, 2018	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	Jul 13, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

Company Name: GHD Pty Ltd VIC
Address: Level 8, 180 Lonsdale St
Melbourne
VIC 3000

Project Name: NORTH EAST LINK - LANDFILL ASSESSMENT
Project ID: 31/350060910

Order No.:
Report #: 607608
Phone: 8687 8000
Fax: 8687 8111

Received: Jul 13, 2018 3:01 PM
Due: Jul 20, 2018
Priority: 5 Day
Contact Name: Kory Auch

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Moisture Set	Vic EPA IW/RG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	QC4002	Jul 11, 2018		Soil	M18-JI16140	X	X
2	QC4003	Jul 11, 2018		Soil	M18-JI16141	X	X
Test Counts						2	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5			0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5			0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5			0.5	Pass	
Allyl chloride	mg/kg	< 0.5			0.5	Pass	
Benzene	mg/kg	< 0.1			0.1	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromochloromethane	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dibromomethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
trans-1,2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1,3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4,5-Trichlorophenol	mg/kg	< 1			1	Pass	
2,4,6-Trichlorophenol	mg/kg	< 1			1.0	Pass	
2,6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1.0	Pass	
Pentachlorophenol	mg/kg	< 1			1.0	Pass	
Tetrachlorophenols - Total	mg/kg	< 1			1.0	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4,6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2,4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Fluoride	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Molybdenum	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 0.2			0.2	Pass	
Tin	mg/kg	< 10			10	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	100			70-130	Pass	
TRH C10-C14	%	75			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	71			70-130	Pass	
1.1.1-Trichloroethane	%	84			70-130	Pass	
1.2-Dichlorobenzene	%	90			70-130	Pass	
1.2-Dichloroethane	%	81			70-130	Pass	
Benzene	%	98			70-130	Pass	
Ethylbenzene	%	97			70-130	Pass	
m&p-Xylenes	%	92			70-130	Pass	
Toluene	%	102			70-130	Pass	
Trichloroethene	%	98			70-130	Pass	
Xylenes - Total	%	91			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	74			70-130	Pass	
TRH C6-C10	%	99			70-130	Pass	
TRH >C10-C16	%	72			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	72			70-130	Pass	
Acenaphthylene	%	71			70-130	Pass	
Anthracene	%	96			70-130	Pass	
Benz(a)anthracene	%	96			70-130	Pass	
Benzo(a)pyrene	%	80			70-130	Pass	
Benzo(b&j)fluoranthene	%	90			70-130	Pass	
Benzo(g,h,i)perylene	%	93			70-130	Pass	
Benzo(k)fluoranthene	%	84			70-130	Pass	
Chrysene	%	102			70-130	Pass	
Dibenz(a,h)anthracene	%	79			70-130	Pass	
Fluoranthene	%	82			70-130	Pass	
Fluorene	%	72			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	70			70-130	Pass	
Naphthalene	%	89			70-130	Pass	
Phenanthrene	%	100			70-130	Pass	
Pyrene	%	83			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	96			70-130	Pass	
4,4'-DDE	%	97			70-130	Pass	
4,4'-DDT	%	92			70-130	Pass	
a-BHC	%	107			70-130	Pass	
Aldrin	%	98			70-130	Pass	
b-BHC	%	97			70-130	Pass	
d-BHC	%	100			70-130	Pass	
Dieldrin	%	95			70-130	Pass	
Endosulfan I	%	101			70-130	Pass	
Endosulfan II	%	96			70-130	Pass	
Endosulfan sulphate	%	95			70-130	Pass	
Endrin	%	75			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde			%	109			70-130	Pass	
Endrin ketone			%	97			70-130	Pass	
g-BHC (Lindane)			%	103			70-130	Pass	
Heptachlor			%	97			70-130	Pass	
Heptachlor epoxide			%	103			70-130	Pass	
Hexachlorobenzene			%	102			70-130	Pass	
Methoxychlor			%	82			70-130	Pass	
LCS - % Recovery									
Polychlorinated Biphenyls									
Aroclor-1260		%	87				70-130	Pass	
LCS - % Recovery									
Phenols (Halogenated)									
2-Chlorophenol		%	95				30-130	Pass	
2,4-Dichlorophenol		%	86				30-130	Pass	
2,4,5-Trichlorophenol		%	51				30-130	Pass	
2,4,6-Trichlorophenol		%	54				30-130	Pass	
2,6-Dichlorophenol		%	97				30-130	Pass	
4-Chloro-3-methylphenol		%	32				30-130	Pass	
Tetrachlorophenols - Total		%	33				30-130	Pass	
LCS - % Recovery									
Phenols (non-Halogenated)									
2-Methylphenol (o-Cresol)		%	82				30-130	Pass	
2-Nitrophenol		%	41				30-130	Pass	
2,4-Dimethylphenol		%	61				30-130	Pass	
3&4-Methylphenol (m&p-Cresol)		%	79				30-130	Pass	
4-Nitrophenol		%	42				30-130	Pass	
Phenol		%	78				30-130	Pass	
LCS - % Recovery									
Chromium (hexavalent)		%	104				70-130	Pass	
Cyanide (total)		%	94				70-130	Pass	
Fluoride		%	109				70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic		%	108				80-120	Pass	
Cadmium		%	100				80-120	Pass	
Chromium		%	110				80-120	Pass	
Copper		%	100				80-120	Pass	
Lead		%	113				80-120	Pass	
Mercury		%	98				75-125	Pass	
Molybdenum		%	105				80-120	Pass	
Nickel		%	111				80-120	Pass	
Selenium		%	99				80-120	Pass	
Silver		%	95				80-120	Pass	
Tin		%	110				80-120	Pass	
Zinc		%	109				80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M18-JI11549	NCP	%	123			70-130	Pass	
TRH C10-C14	M18-JI18888	NCP	%	85			70-130	Pass	
Spike - % Recovery									
Volatile Organics				Result 1					
1,1-Dichloroethene	M18-JI14178	NCP	%	89			70-130	Pass	
1,1,1-Trichloroethane	M18-JI14178	NCP	%	98			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1,2-Dichlorobenzene	M18-JI14178	NCP	%	112			70-130	Pass	
1,2-Dichloroethane	M18-JI14178	NCP	%	113			70-130	Pass	
Benzene	M18-JI14178	NCP	%	123			70-130	Pass	
Ethylbenzene	M18-JI14178	NCP	%	122			70-130	Pass	
m&p-Xylenes	M18-JI14178	NCP	%	119			70-130	Pass	
o-Xylene	M18-JI14178	NCP	%	113			70-130	Pass	
Toluene	M18-JI14178	NCP	%	117			70-130	Pass	
Trichloroethene	M18-JI14178	NCP	%	123			70-130	Pass	
Xylenes - Total	M18-JI14178	NCP	%	117			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M18-JI14178	NCP	%	108			70-130	Pass	
TRH C6-C10	M18-JI11549	NCP	%	122			70-130	Pass	
TRH >C10-C16	M18-JI18888	NCP	%	85			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M18-JI18886	NCP	%	71			70-130	Pass	
Acenaphthylene	M18-JI18886	NCP	%	71			70-130	Pass	
Anthracene	M18-JI18886	NCP	%	90			70-130	Pass	
Benz(a)anthracene	M18-JI18886	NCP	%	76			70-130	Pass	
Benzo(a)pyrene	M18-JI18886	NCP	%	82			70-130	Pass	
Benzo(b&j)fluoranthene	M18-JI18886	NCP	%	71			70-130	Pass	
Benzo(g,h,i)perylene	M18-JI18886	NCP	%	80			70-130	Pass	
Benzo(k)fluoranthene	M18-JI18886	NCP	%	75			70-130	Pass	
Chrysene	M18-JI18886	NCP	%	99			70-130	Pass	
Dibenz(a,h)anthracene	M18-JI18886	NCP	%	101			70-130	Pass	
Fluoranthene	M18-JI18886	NCP	%	83			70-130	Pass	
Fluorene	M18-JI18886	NCP	%	71			70-130	Pass	
Indeno(1,2,3-cd)pyrene	M18-JI18886	NCP	%	93			70-130	Pass	
Naphthalene	M18-JI18886	NCP	%	88			70-130	Pass	
Phenanthrene	M18-JI18886	NCP	%	106			70-130	Pass	
Pyrene	M18-JI18886	NCP	%	86			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4,4'-DDD	B18-JI20333	NCP	%	109			70-130	Pass	
4,4'-DDE	B18-JI20333	NCP	%	101			70-130	Pass	
4,4'-DDT	B18-JI20333	NCP	%	70			70-130	Pass	
a-BHC	B18-JI20333	NCP	%	107			70-130	Pass	
Aldrin	B18-JI20333	NCP	%	99			70-130	Pass	
b-BHC	B18-JI20333	NCP	%	100			70-130	Pass	
d-BHC	B18-JI20333	NCP	%	106			70-130	Pass	
Dieldrin	B18-JI20333	NCP	%	98			70-130	Pass	
Endosulfan I	B18-JI20333	NCP	%	105			70-130	Pass	
Endosulfan II	B18-JI20333	NCP	%	98			70-130	Pass	
Endosulfan sulphate	B18-JI20333	NCP	%	99			70-130	Pass	
Endrin	B18-JI20333	NCP	%	96			70-130	Pass	
Endrin aldehyde	B18-JI20333	NCP	%	101			70-130	Pass	
Endrin ketone	B18-JI20333	NCP	%	91			70-130	Pass	
g-BHC (Lindane)	B18-JI20333	NCP	%	106			70-130	Pass	
Heptachlor	B18-JI20333	NCP	%	102			70-130	Pass	
Heptachlor epoxide	B18-JI20333	NCP	%	105			70-130	Pass	
Hexachlorobenzene	B18-JI20333	NCP	%	104			70-130	Pass	
Methoxychlor	B18-JI20333	NCP	%	72			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	S18-JI14246	NCP	%	83			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	M18-JI18886	NCP	%	93			30-130	Pass	
2,4-Dichlorophenol	M18-JI18886	NCP	%	85			30-130	Pass	
2,4,5-Trichlorophenol	M18-JI18886	NCP	%	31			30-130	Pass	
2,4,6-Trichlorophenol	M18-JI18886	NCP	%	39			30-130	Pass	
2,6-Dichlorophenol	M18-JI18886	NCP	%	99			30-130	Pass	
4-Chloro-3-methylphenol	M18-JI18886	NCP	%	31			30-130	Pass	
Pentachlorophenol	M18-JI18886	NCP	%	30			30-130	Pass	
Tetrachlorophenols - Total	M18-JI18886	NCP	%	38			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Methylphenol (o-Cresol)	M18-JI18886	NCP	%	76			30-130	Pass	
2-Nitrophenol	M18-JI18886	NCP	%	40			30-130	Pass	
2,4-Dimethylphenol	M18-JI18886	NCP	%	62			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M18-JI18886	NCP	%	82			30-130	Pass	
4-Nitrophenol	M18-JI18886	NCP	%	31			30-130	Pass	
Phenol	M18-JI18886	NCP	%	76			30-130	Pass	
Spike - % Recovery									
				Result 1					
Chromium (hexavalent)	M18-JI16140	CP	%	101			70-130	Pass	
Cyanide (total)	M18-JI13951	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	B18-JI15861	NCP	%	91			75-125	Pass	
Cadmium	B18-JI15861	NCP	%	107			75-125	Pass	
Chromium	B18-JI15861	NCP	%	104			75-125	Pass	
Copper	B18-JI15861	NCP	%	109			75-125	Pass	
Lead	B18-JI15861	NCP	%	106			75-125	Pass	
Mercury	B18-JI15861	NCP	%	85			70-130	Pass	
Molybdenum	B18-JI15861	NCP	%	108			75-125	Pass	
Nickel	B18-JI15861	NCP	%	100			75-125	Pass	
Selenium	B18-JI15861	NCP	%	92			75-125	Pass	
Silver	B18-JI15861	NCP	%	108			75-125	Pass	
Tin	B18-JI15861	NCP	%	114			75-125	Pass	
Zinc	B18-JI15861	NCP	%	101			75-125	Pass	
Spike - % Recovery									
				Result 1					
Fluoride	M18-JI16141	CP	%	80			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-JI11752	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S18-JI14651	NCP	mg/kg	32	33	5.0	30%	Pass	
TRH C15-C28	S18-JI14651	NCP	mg/kg	190	200	6.0	30%	Pass	
TRH C29-C36	S18-JI14651	NCP	mg/kg	230	260	14	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1,1-Dichloroethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1,2,4-Trichlorobenzene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobutadiene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1,1-Dichloroethene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
1.1.1-Trichloroethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1.2-Tetrachloroethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2-Trichloroethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2.2-Tetrachloroethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dibromoethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichlorobenzene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloroethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloropropane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.3-Trichloropropane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.4-Trimethylbenzene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichlorobenzene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichloropropane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3.5-Trimethylbenzene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.4-Dichlorobenzene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Butanone (MEK)	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Propanone (Acetone)	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chlorotoluene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Methyl-2-pentanone (MIBK)	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Allyl chloride	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzene	S18-JI11752	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Bromobenzene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromochloromethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromodichloromethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromoform	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromomethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon disulfide	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon Tetrachloride	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chlorobenzene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroform	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloromethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.2-Dichloroethene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.3-Dichloropropene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromochloromethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromomethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dichlorodifluoromethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Ethylbenzene	S18-JI11752	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Iodomethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Isopropyl benzene (Cumene)	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
m&p-Xylenes	S18-JI11752	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methylene Chloride	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
o-Xylene	S18-JI11752	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Styrene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Tetrachloroethene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Toluene	S18-JI11752	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
trans-1.2-Dichloroethene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
trans-1.3-Dichloropropene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichloroethene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichlorofluoromethane	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Vinyl chloride	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Xylenes - Total	S18-JI11752	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S18-JI11752	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S18-JI11752	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S18-JI14651	NCP	mg/kg	63	63	1.0	30%	Pass
TRH >C16-C34	S18-JI14651	NCP	mg/kg	320	360	11	30%	Pass
TRH >C34-C40	S18-JI14651	NCP	mg/kg	120	150	18	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	B18-JI20331	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	B18-JI20331	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Toxaphene	B18-JI20331	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	B18-JI20331	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1221	B18-JI20331	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	B18-JI20331	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1242	B18-JI20331	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1248	B18-JI20331	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1254	B18-JI20331	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass

Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1260	B18-JI20331	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Total PCB*	B18-JI20331	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	M18-JI18885	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	M18-JI18885	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	M18-JI18885	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	M18-JI18885	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	M18-JI18885	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	M18-JI18885	NCP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	M18-JI18885	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	M18-JI18885	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
2-Nitrophenol	M18-JI18885	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dinitrophenol	M18-JI18885	NCP	mg/kg	< 5	< 5	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M18-JI18885	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	M18-JI18885	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	M18-JI18885	NCP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	M18-JI18885	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M18-JI12655	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Cyanide (total)	M18-JI14461	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Fluoride	M18-JI16724	NCP	mg/kg	530	510	3.0	30%	Pass
pH (1:5 Aqueous extract at 25°C as rec.)	M18-JI15477	NCP	pH Units	5.1	4.9	pass	30%	Pass
% Moisture	M18-JI16234	NCP	%	17	17	1.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	B18-JI15861	NCP	mg/kg	22	26	15	30%	Pass
Cadmium	B18-JI15861	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	B18-JI15861	NCP	mg/kg	84	85	1.0	30%	Pass
Copper	B18-JI15861	NCP	mg/kg	35	36	1.0	30%	Pass
Lead	B18-JI15861	NCP	mg/kg	22	22	2.0	30%	Pass
Mercury	B18-JI15860	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Molybdenum	B18-JI15861	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Nickel	B18-JI15861	NCP	mg/kg	37	38	2.0	30%	Pass
Selenium	B18-JI15861	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	B18-JI15861	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tin	B18-JI15861	NCP	mg/kg	< 10	< 10	<1	30%	Pass
Zinc	B18-JI15861	NCP	mg/kg	68	66	2.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Michael Brancati	Senior Analyst-Inorganic (VIC)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EM1811179**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **2**
No. of samples analysed : **2**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 03-Jul-2018 09:25
Date Analysis Commenced : 16-Jul-2018
Issue Date : 17-Jul-2018 15:05



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				NEL-BH172_0.5m	NEL-BH141_0.2m	----	----	----
Client sampling date / time				29-Jun-2018 00:00	02-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1811179-001	EM1811179-002	-----	-----	-----
				Result	Result	----	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	----	----	----
Nickel	7440-02-0	0.1	mg/L	<0.1	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH172_0.5m	NEL-BH141_0.2m	----	----	----
Client sampling date / time				29-Jun-2018 00:00	02-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1811179-001	EM1811179-002	-----	-----	-----
				Result	Result	----	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	9.0	8.1	----	----	----
After HCl pH	----	0.1	pH Unit	1.5	1.4	----	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	----	----	----
Final pH	----	0.1	pH Unit	5.0	5.1	----	----	----

Rebatch

Client / Client code: GHD

Project: 31350060910

Project Manger: DAVID QUINN

Date /time sample rec: 3/7 @ 9:25am

Date/time Instructions rec: 12/7 @ 5:33pm

Due date: std

Due date surcharge:

CS Contact: Shirley

Additional Information:

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1811179	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 03-Jul-2018
Order number	: ----	Date Analysis Commenced	: 16-Jul-2018
C-O-C number	: ----	Issue Date	: 17-Jul-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 2		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1805642)									
EM1811162-001	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1811179-002	NEL-BH141_0.2m	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1805642)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	95.3	88	113
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	95.6	86	111

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1805642)							
EM1811162-002	Anonymous	EG005C: Lead	7439-92-1	1 mg/L	94.0	86	118
		EG005C: Nickel	7440-02-0	1 mg/L	93.2	88	116

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1811179	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 03-Jul-2018
Site	: ----	Issue Date	: 17-Jul-2018
Sampler	: ----	No. of samples received	: 2
Order number	:	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH141_0.2m	02-Jul-2018	16-Jul-2018	29-Dec-2018	✔	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH172_0.5m	29-Jun-2018	16-Jul-2018	26-Dec-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)								
NEL-BH172 0.5m.	NEL-BH141 0.2m	16-Jul-2018	17-Jul-2018	12-Jan-2019	✔	17-Jul-2018	12-Jan-2019	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1811282**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **North East Link - Contamination**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **3**
No. of samples analysed : **3**

Page : 1 of 4
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 05-Jul-2018 10:45
Date Analysis Commenced : 18-Jul-2018
Issue Date : 19-Jul-2018 15:36



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1810779 and EM1810780.



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-BH166_0.5m	NEL-BH143_0.2m	NEL-EF-BH009_0.5m	----	----
Client sampling date / time				03-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1811282-001	EM1811282-002	EM1811282-003	-----	-----
				Result	Result	Result	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	----	----	----
Nickel	7440-02-0	0.1	mg/L	----	----	<0.1	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH166_0.5m	NEL-BH143_0.2m	NEL-EF-BH009_0.5m	----	----
Client sampling date / time				03-Jul-2018 00:00	04-Jul-2018 00:00	04-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1811282-001	EM1811282-002	EM1811282-003	-----	-----
Result				Result	Result	Result	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	7.2	6.0	8.8	----	----
After HCl pH	----	0.1	pH Unit	1.2	1.0	1.1	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	----	----
Final pH	----	0.1	pH Unit	5.0	5.0	5.1	----	----

re-batch

Shirley LeCornu

MS: 2826

From: David Quinn <David.Quinn@ghd.com>
Sent: Friday, 13 July 2018 4:43 PM
To: Shirley LeCornu
Cc: Kory.Auch@ghd.com
Subject: NEL Leachate testing

Hi Shirley

Can we please have leachate tests done on the below, processed as one work order.

Lab report #	Date	Sample ID	Leachate testing
EM1810780 #8	3/07/2018	NEL-BH166_0.5m	Lead
EM1810779 #8	4/07/2018	NEL-BH143_0.2m	Lead
EM1810779 #2	4/07/2018	NEL-EF-BH009_0.5m	Nickel

tray 2707
tray 2711

Thanks

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance

GHD

Proudly employee owned

T: +61 3 8687 8627 | M: +61 437 227 626 | V: 318 627 | E: david.quinn@ghd.com
Level 18, 180 Lonsdale Street Melbourne VIC 3000 | www.ghd.com

Environmental Division
Melbourne

Work Order Reference

EM1811282



Environmental Division Melbourne

Connect



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Voted Australia's no.1 Waste Consultant in 2012, 2013, 2014, 2015, 2016 and 2017 in the *Inside Waste Consultants Review*

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1811282

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number : ----</p> <p>C-O-C number : ----</p> <p>Site : North East Link - Contamination</p> <p>Sampler :</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 3</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Dates

Date Samples Received : 05-Jul-2018 10:45	Issue Date : 16-Jul-2018
Client Requested Due Date : 20-Jul-2018	Scheduled Reporting Date : 20-Jul-2018

Delivery Details

Mode of Delivery : Samples On Hand	Security Seal : Not Available
No. of coolers/boxes : ----	Temperature : ----
Receipt Detail :	No. of samples received / analysed : 3 / 3

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1810779 and EM1810780.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN60a ASLP Leachate Procedure
EM1811282-001	03-Jul-2018 00:00	NEL-BH166_0.5m	✓	✓
EM1811282-002	04-Jul-2018 00:00	NEL-BH143_0.2m	✓	✓
EM1811282-003	04-Jul-2018 00:00	NEL-EF-BH009_0.5m	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1811282	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 05-Jul-2018
Order number	: ----	Date Analysis Commenced	: 18-Jul-2018
C-O-C number	: ----	Issue Date	: 19-Jul-2018
Sampler	: ----		
Site	: North East Link - Contamination		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1813653)									
EM1811282-001	NEL-BH166_0.5m	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1811345-023	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1813653)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	103	88	113
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	86.8	86	111

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1813653)							
EM1811282-002	NEL-BH143_0.2m	EG005C: Lead	7439-92-1	1 mg/L	93.8	86	118
		EG005C: Nickel	7440-02-0	1 mg/L	91.2	88	116

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1811282	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 05-Jul-2018
Site	: North East Link - Contamination	Issue Date	: 19-Jul-2018
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH166_0.5m	03-Jul-2018	18-Jul-2018	30-Dec-2018	✔	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH143_0.2m, NEL-EF-BH009_0.5m	04-Jul-2018	18-Jul-2018	31-Dec-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)								
NEL-BH166_0.5m,	NEL-BH143_0.2m,	18-Jul-2018	19-Jul-2018	14-Jan-2019	✔	19-Jul-2018	14-Jan-2019	✔
NEL-EF-BH009_0.5m								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1811286**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **KH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **15**
No. of samples analysed : **9**

Page : 1 of 19
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 13-Jul-2018 13:10
Date Analysis Commenced : 16-Jul-2018
Issue Date : 19-Jul-2018 16:41



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH012_1.0	NEL-ENV-BH012_1.5	NEL-ENV-BH016_0.5	NEL-ENV-BH016_1.5	NEL-ENV-BH018_0.5
Client sampling date / time					13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811286-003	EM1811286-004	EM1811286-006	EM1811286-008	EM1811286-010
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.7	6.7	7.3	7.4	7.6
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		19.1	21.0	18.0	21.3	18.7
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		8	7	<5	<5	5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		7	9	6	13	8
Lead	7439-92-1	5	mg/kg		17	20	9	9	9
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		13	19	5	14	16
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		11	18	6	16	20
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		250	240	280	500	220
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH012_1.0	NEL-ENV-BH012_1.5	NEL-ENV-BH016_0.5	NEL-ENV-BH016_1.5	NEL-ENV-BH018_0.5
Client sampling date / time					13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00
Compound	CAS Number	LOR	Unit		EM1811286-003	EM1811286-004	EM1811286-006	EM1811286-008	EM1811286-010
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH012_1.0	NEL-ENV-BH012_1.5	NEL-ENV-BH016_0.5	NEL-ENV-BH016_1.5	NEL-ENV-BH018_0.5
Client sampling date / time				13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811286-003	EM1811286-004	EM1811286-006	EM1811286-008	EM1811286-010
				Result	Result	Result	Result	Result

EP075A: Phenolic Compounds (Halogenated) - Continued

EP075A: Phenolic Compounds (Non-halogenated)

Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1

EP075B: Polynuclear Aromatic Hydrocarbons

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH012_1.0	NEL-ENV-BH012_1.5	NEL-ENV-BH016_0.5	NEL-ENV-BH016_1.5	NEL-ENV-BH018_0.5
Client sampling date / time				13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811286-003	EM1811286-004	EM1811286-006	EM1811286-008	EM1811286-010
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH012_1.0	NEL-ENV-BH012_1.5	NEL-ENV-BH016_0.5	NEL-ENV-BH016_1.5	NEL-ENV-BH018_0.5
Client sampling date / time				13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811286-003	EM1811286-004	EM1811286-006	EM1811286-008	EM1811286-010
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	88.2	85.1	85.7	96.8	63.0
EP074S: VOC Surrogates (Ultra-Trace)								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	84.6	83.9	78.4	79.3	78.5
Toluene-D8	2037-26-5	0.1	%	75.5	73.6	64.9	57.0	57.5
4-Bromofluorobenzene	460-00-4	0.1	%	123	116	110	83.5	104
EP075S: Acid Extractable Surrogates (Waste Classification)								
Phenol-d6	13127-88-3	0.025	%	114	114	124	130	128
2-Chlorophenol-D4	93951-73-6	0.025	%	82.0	82.8	88.5	94.4	104
2,4,6-Tribromophenol	118-79-6	0.025	%	79.6	76.6	83.1	83.3	93.1
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)								
Nitrobenzene-D5	4165-60-0	0.025	%	78.1	77.3	82.2	88.1	99.3
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	82.0	80.7	82.9	91.7	102
2-Fluorobiphenyl	321-60-8	0.025	%	74.2	69.7	73.8	76.0	86.1
Anthracene-d10	1719-06-8	0.025	%	90.6	85.1	91.2	93.6	106
4-Terphenyl-d14	1718-51-0	0.025	%	88.0	82.4	88.2	89.7	101



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-ENV-BH018_1.5	----	----	----	----
Client sampling date / time				13-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1811286-012	-----	-----	-----	-----
Result				----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.7	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	14.1	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	7	----	----	----	----
Lead	7439-92-1	5	mg/kg	7	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	11	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	19	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	140	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH018_1.5	----	----	----	----
Client sampling date / time				13-Jul-2018 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1811286-012	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	----	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	----	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	----	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	----	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	----	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	----	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	----	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	----	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	----	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH018_1.5	----	----	----	----
				Client sampling date / time	13-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1811286-012	-----	-----	-----	-----
					Result	----	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH018_1.5	----	----	----	----
Client sampling date / time					13-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1811286-012	-----	-----	-----	-----
				Result	----	----	----	----	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH018_1.5	----	----	----	----
Client sampling date / time				13-Jul-2018 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1811286-012	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	94.2	----	----	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	79.6	----	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	59.6	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	109	----	----	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%	128	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%	94.7	----	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%	82.2	----	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%	89.2	----	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	91.5	----	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%	76.9	----	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%	93.0	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%	88.7	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB308	FB308	TB308	----	----
Client sampling date / time					13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1811286-013	EM1811286-014	EM1811286-015	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		9.57	8.24	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
^ Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	----	----	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	----	----	----
gamma-BHC	58-89-9	0.5	µg/L		<0.5	<0.5	----	----	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	----	----	----
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB308	FB308	TB308	----	----
Client sampling date / time					13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1811286-013	EM1811286-014	EM1811286-015	-----	-----
					Result	Result	Result	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L		<0.5	<0.5	----	----	----
4,4'-DDT	50-29-3	2.0	µg/L		<2.0	<2.0	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	<0.5	----	----	----
Methoxychlor	72-43-5	2.0	µg/L		<2.0	<2.0	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L		<0.5	<0.5	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L		<0.5	<0.5	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	5	µg/L		<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds									
Vinyl chloride	75-01-4	50	µg/L		<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L		<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L		<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L		<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L		<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L		<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L		<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L		<5	<5	----	----	----
1,1,2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1,4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1,2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1,2,4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB308	FB308	TB308	----	----
Client sampling date / time				13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1811286-013	EM1811286-014	EM1811286-015	-----	-----
				Result	Result	Result	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	-----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	-----	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	-----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	-----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB308	FB308	TB308	----	----
Client sampling date / time					13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1811286-013	EM1811286-014	EM1811286-015	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		90.2	86.4	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		93.7	83.2	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		105	80.4	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		105	104	----	----	----
Toluene-D8	2037-26-5	5	%		84.3	85.4	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		96.8	105	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		33.1	31.4	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB308	FB308	TB308	----	----
Client sampling date / time					13-Jul-2018 00:00	13-Jul-2018 00:00	13-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1811286-013	EM1811286-014	EM1811286-015	-----	-----
					Result	Result	Result	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
2-Chlorophenol-D4	93951-73-6	1.0	%		82.9	80.9	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		70.6	66.6	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		90.4	87.4	----	----	----
Anthracene-d10	1719-06-8	1.0	%		91.9	89.6	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		98.1	94.8	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		91.1	95.6	83.4	----	----
Toluene-D8	2037-26-5	2	%		81.4	84.5	71.3	----	----
4-Bromofluorobenzene	460-00-4	2	%		107	110	98.6	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	117
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	51	127
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129

Page : 19 of 19
Work Order : EM1811286
Client : GHD PTY LTD
Project : 31350060910



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates - Continued			
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Page 1 of 1

Job Number 31350060910		GHD Office Melbourne		Laboratory: ALS Springvale		PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format															
Project North East Link - Contamination Assessment		Address: 2 - 4 Westall Rd, Springvale		Lab Contact: Shirley LeCornu																	
GHD Contact Kory Auch		Contact Email kory.auch@ghd.com		Container																	
Standard TAT		Quote No./GHD Reference MEL/124/18		Analyses Required																	
Sample ID	Date	Time	Composite Sample	Sample Type Is Soil? Is Air? Is Water? Is Other?	Preservative	Type Is Other? Is Bag? Is Glass Bottle? Is Plastic Bottle?	Number	Volume (mL)	HOLD	IWRG621	Volatile TPH/BTEX										
1 NEL-ENV-BH012-0.1m	13/07/2018			S	N	J	1	250	X												
2 - BH012-0.5m									X												
3 - BH012-1.0m									X												
4 - BH012-1.5m									X												
5 - BH016-0.1m									X												
6 - BH016-0.5m									X												
7 - BH016-1.0m									X												
8 - BH016-1.5m									X												
9 - BH018-0.1m									X												
10 - BH018-0.5m									X												
11 - BH018-1.0m									X												
12 - BH018-1.5m				S	N	J	1	250	X												
13 RB308				W	Y	VGP	8	-	X												
14 FB308				N	Y	VGP	8	-	X												
15 TB308	13/07/2018			W	Y	V	2	-		X											

Environmental Division
Melbourne

Work Order Reference
EM1811286



Telephone : 61-3-8549 9600

Sampled by:	Kory Auch / TS	Date/Time:	13/7/2018 @ 10:00	Relinquished by:	Kory Auch / TS	Date/Time:	13/7/2018 @ 11:30
Received by:	Nisila (ALS)	Date/Time:	13/7/18 13:10	Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:		Date/Time:					
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.s.davidson@aecom.com) & Nazuha Rosli (nazuha.rosli@aecom.com)						

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1811286**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	:		
Sampler	: KH		

Dates

Date Samples Received	: 13-Jul-2018 13:10	Issue Date	: 16-Jul-2018
Client Requested Due Date	: 20-Jul-2018	Scheduled Reporting Date	: 20-Jul-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 11.0°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 15 / 9

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
RB308	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB308	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
RB308	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB308	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
RB308	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
FB308	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Total Cyanide by Segmented Flow Analyser : EK026SF		
RB308	- Clear Plastic Bottle - Natural	- Opaque plastic bottle - NaOH
FB308	- Clear Plastic Bottle - Natural	- Opaque plastic bottle - NaOH

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1811286-001	13-Jul-2018 00:00	NEL-ENV-BH012_0.1	✓		
EM1811286-002	13-Jul-2018 00:00	NEL-ENV-BH012_0.5	✓		
EM1811286-003	13-Jul-2018 00:00	NEL-ENV-BH012_1.0		✓	✓
EM1811286-004	13-Jul-2018 00:00	NEL-ENV-BH012_1.5		✓	✓
EM1811286-005	13-Jul-2018 00:00	NEL-ENV-BH016_0.1	✓		
EM1811286-006	13-Jul-2018 00:00	NEL-ENV-BH016_0.5		✓	✓
EM1811286-007	13-Jul-2018 00:00	NEL-ENV-BH016_1.0	✓		
EM1811286-008	13-Jul-2018 00:00	NEL-ENV-BH016_1.5		✓	✓
EM1811286-009	13-Jul-2018 00:00	NEL-ENV-BH018_0.1	✓		
EM1811286-010	13-Jul-2018 00:00	NEL-ENV-BH018_0.5		✓	✓
EM1811286-011	13-Jul-2018 00:00	NEL-ENV-BH018_1.0	✓		
EM1811286-012	13-Jul-2018 00:00	NEL-ENV-BH018_1.5		✓	✓

QUALITY CONTROL REPORT

Work Order	: EM1811286	Page	: 1 of 20
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 13-Jul-2018
Order number	:	Date Analysis Commenced	: 16-Jul-2018
C-O-C number	: ----	Issue Date	: 19-Jul-2018
Sampler	: KH		
Site	:		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 15		
No. of samples analysed	: 9		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1803742)									
EM1811233-012	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.7	7.7	0.00	0% - 20%
EM1811278-008	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.4	6.2	3.17	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1803745)									
EM1811286-012	NEL-ENV-BH018_1.5	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.7	7.6	1.31	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1803706)									
EM1811266-002	Anonymous	EA055: Moisture Content	----	0.1	%	24.8	24.5	1.31	0% - 20%
EM1811278-010	Anonymous	EA055: Moisture Content	----	0.1	%	5.3	5.1	3.45	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1803388)									
EM1811292-009	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	3	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	8	25.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	12	16.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	5	20.2	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	10	11	0.00	No Limit
EM1811286-006	NEL-ENV-BH016_0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	5	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	6	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1803388) - continued									
EM1811286-006	NEL-ENV-BH016_0.5	EG005T: Lead	7439-92-1	5	mg/kg	9	8	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	6	7	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1803387)									
EM1811123-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811278-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1803389)									
EM1811286-006	NEL-ENV-BH016_0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1803750)									
EM1811278-006	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811286-004	NEL-ENV-BH012_1.5	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1805990)									
EM1811278-010	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1811286-012	NEL-ENV-BH018_1.5	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1803212)									
EM1811071-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	300	320	6.22	No Limit
EM1811278-004	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	340	280	20.3	No Limit
EK040T: Fluoride Total (QC Lot: 1803213)									
EM1811286-004	NEL-ENV-BH012_1.5	EK040T: Fluoride	16984-48-8	40	mg/kg	240	260	11.2	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1803192)									
EM1811278-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811278-011	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1803178)									
EM1811278-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811278-011	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP074H: Naphthalene (QC Lot: 1803178)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074H: Naphthalene (QC Lot: 1803178) - continued									
EM1811278-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1811278-011	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1803178)									
EM1811278-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1811278-011	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1803178) - continued									
EM1811278-011	Anonymous	EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1803190)									
EM1811278-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		0-2							
EM1811278-011	Anonymous	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1811278-001	Anonymous	0-2							
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
EM1811278-011	Anonymous	EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
EM1811278-011	Anonymous	EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1803190) - continued									
EM1811278-011	Anonymous	EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1803190)									
EM1811278-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811278-011	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1803190)									
EM1811278-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1803190) - continued									
EM1811278-001	Anonymous	EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1811278-011	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1803178)									
EM1811278-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1811278-011	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1803191)									
EM1811278-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1811278-011	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1803178)									
EM1811278-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1811278-011	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1803191)									
EM1811278-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1811278-011	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1805197)									
EM1811071-014	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.04	6.28	3.90	0% - 20%
EM1811295-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	2.61	2.56	1.93	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1805905)									
EM1811157-020	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1811264-007	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.004	0.003	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1805905) - continued									
EM1811264-007	Anonymous	EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.022	0.021	6.21	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1805908)									
EM1811264-007	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1805906)									
EM1811242-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1811303-007	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1805198)									
EM1811071-014	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1811295-001	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.3	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1805147)									
EM1811297-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1811297-005	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1805147)									
EM1811297-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1811297-005	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1805147) - continued									
EM1811297-005	Anonymous	EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1805147)									
EM1811297-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1811297-005	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1805147)									
EM1811297-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1811297-005	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1805148)									
EM1811297-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1811297-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1805148)									
EM1811297-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1811297-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1805148)									
EM1811297-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1811297-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Napthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1803388)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	92.7	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	89.4	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	87.9	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	89.4	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	101	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	97.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	102	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.4	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	105	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	94.5	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1803387)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	89.2	77	104
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1803389)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	91.2	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1803750)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	76.8	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1805990)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	94.8	80	110
EK040T: Fluoride Total (QCLot: 1803212)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	89.0	75	110
EK040T: Fluoride Total (QCLot: 1803213)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	91.5	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1803192)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	105	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1803178)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	93.6	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	89.0	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	94.7	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	77.9	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	82.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	77.7	74	114
EP074H: Naphthalene (QCLot: 1803178)								



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074H: Naphthalene (QCLot: 1803178) - continued								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	94.2	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1803178)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	107	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	92.4	62	127
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	104	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	100	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	101	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	112	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	109	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	107	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	106	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	98.6	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	86.0	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	83.4	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	110	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	71.7	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	100	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	101	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	102	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	103	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	106	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1803190)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	111	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	102	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	111	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	108	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	109	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	105	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	101	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	114	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	104	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1803190)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	116	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	106	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	102	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	105	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	98.9	43	120



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1803190) - continued								
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	24 mg/kg	88.2	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	94.0	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	106	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	109	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	96.1	12	132
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1803190)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	116	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	113	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	110	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	112	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	114	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	117	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	119	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	118	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	114	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	118	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	116	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	114	62	132
EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	104	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	104	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	101	55	137
EP075I: Organochlorine Pesticides (QCLot: 1803190)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	111	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	115	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	110	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	111	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	114	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	116	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	117	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	117	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	120	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	119	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	112	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	118	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	119	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	132	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	76.0	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	118	66	135



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075I: Organochlorine Pesticides (QCLot: 1803190) - continued								
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	118	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	119	63	139
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	113	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	108	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1803178)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	72.7	69	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1803191)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	89.9	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	102	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	100	77	116
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1803178)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	74.2	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1803191)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	93.5	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	102	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	89.5	68	124

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG020F: Dissolved Metals by ICP-MS (QCLot: 1805905)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	103	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.3	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.6	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.5	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	101	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.5	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	92.4	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	98.6	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.9	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1805908)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	96.0	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1805906)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.4	81	114
EK040P: Fluoride by PC Titrator (QCLot: 1805198)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	111	85	112



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1805518)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	83.5	54	132
EP068A: Organochlorine Pesticides (OC) (QCLot: 1805520)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	82.2	51	122
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	70.8	51	118
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	82.2	57	119
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	80.7	51	121
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	80.3	58	114
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	76.5	47	113
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	75.0	53	118
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	82.7	53	117
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	90.7	50	126
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	75.8	55	121
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	77.9	54	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	80.8	50	121
EP068: 4,4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	70.5	54	120
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	92.0	45	122
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	78.6	55	120
EP068: 4,4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	74.4	53	126
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	88.5	52	123
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	88.8	48	121
EP068: 4,4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	92.5	46	120
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	89.8	56	118
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	98.0	42	123
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1805147)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	99.6	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1805147)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	76.0	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	74.7	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	117	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	90.8	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	95.8	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	84.8	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	81.8	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	99.7	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	92.4	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	101	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	88.9	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	100	75	112



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074E: Halogenated Aliphatic Compounds (QCLot: 1805147) - continued								
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	90.6	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	113	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1805147)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	99.2	82	114
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	103	76	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	104	82	112
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	102	62	119
EP074G: Trihalomethanes (QCLot: 1805147)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	96.7	79	119
EP075(SIM)A: Phenolic Compounds (QCLot: 1805521)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	34.4	20	49
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	79.8	46	103
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	73.9	43	98
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	67.3	41	92
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	79.9	44	114
EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	90.3	43	115
EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	82.2	48	111
EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	84.0	50	116
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	85.6	49	110
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	83.2	48	113
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	83.0	47	115
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	49.6	48	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1805521)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	79.1	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	79.4	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	82.1	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	82.8	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	84.3	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	99.6	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	84.8	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	82.8	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	83.0	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	82.0	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	86.0	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	83.0	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	85.1	56	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	81.9	53	123



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1805521) - continued								
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	81.0	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	81.9	53	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1805148)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	82.5	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1805519)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	91.9	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	94.6	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	93.9	54	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1805148)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	79.0	66	123
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1805519)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	92.5	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	94.8	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	95.6	58	137
EP080: BTEXN (QCLot: 1805148)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	91.1	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	93.0	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	93.8	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	96.1	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	102	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	103	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Recovery Limits (%)	
					MS	Low	High
Client sample ID	Method: Compound	CAS Number					
EG005T: Total Metals by ICP-AES (QCLot: 1803388)							
EM1811286-008	NEL-ENV-BH016_1.5	EG005T: Arsenic	7440-38-2	50 mg/kg	92.8	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.6	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	89.2	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	93.5	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	101	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	91.4	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	84.0	71	125



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1803388) - continued							
EM1811286-008	NEL-ENV-BH016_1.5	EG005T: Zinc	7440-66-6	50 mg/kg	91.8	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1803387)							
EM1811123-011	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	78.1	76	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1803389)							
EM1811286-008	NEL-ENV-BH016_1.5	EG035T: Mercury	7439-97-6	5 mg/kg	95.2	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1803750)							
EM1811278-007	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	80.3	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1805990)							
EM1811278-011	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	91.2	77	113
EK040T: Fluoride Total (QCLot: 1803212)							
EM1811071-003	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	97.8	70	130
EK040T: Fluoride Total (QCLot: 1803213)							
EM1811286-006	NEL-ENV-BH016_0.5	EK040T: Fluoride	16984-48-8	400 mg/kg	88.2	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1803192)							
EM1811278-004	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	106	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1803178)							
EM1811278-002	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	85.0	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	79.4	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1803178)							
EM1811278-002	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	75.1	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	83.6	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	99.9	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1803190)							
EM1811278-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	94.8	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	53.9	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	28.4	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1803190)							
EM1811278-002	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	73.0	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	59.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1803190)							
EM1811278-002	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	97.5	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	110	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1803178)							
EM1811278-002	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	56.3	43	111



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1803191)							
EM1811278-003	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	101	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	107	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	92.7	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1803178)							
EM1811278-002	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	56.9	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1803191)							
EM1811278-003	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	102	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	98.2	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	93.6	44	126

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1805905)							
EM1811157-020	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	97.0	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	97.2	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	93.8	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.4	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	94.9	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	97.0	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1805906)							
EM1811264-007	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	100	70	120
EK040P: Fluoride by PC Titrator (QCLot: 1805198)							
EM1811072-008	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	115	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1805147)							
EM1811297-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	80.8	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	82.8	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1805147)							
EM1811297-002	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	92.5	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1805148)							
EM1811297-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	77.9	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1805148)							
EM1811297-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	73.5	44	122
EP080: BTEXN (QCLot: 1805148)							
EM1811297-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	94.3	68	130
		EP080: Toluene	108-88-3	20 µg/L	94.2	72	132

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Work Order : EM1811286
Client : GHD PTY LTD
Project : 31350060910



QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1811286**

Page : 1 of 12

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **KORY AUCH**

Telephone : +61-3-8549 9630

Project : 31350060910

Date Samples Received : 13-Jul-2018

Site :

Issue Date : 19-Jul-2018

Sampler : **KH**

No. of samples received : 15

Order number :

No. of samples analysed : 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RB308, FB308	----	----	----	17-Jul-2018	13-Jul-2018	4

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)		13-Jul-2018	17-Jul-2018	20-Jul-2018	✔	17-Jul-2018	17-Jul-2018	✔
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,							
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		13-Jul-2018	----	----	----	16-Jul-2018	27-Jul-2018	✓
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,							
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)		13-Jul-2018	17-Jul-2018	09-Jan-2019	✓	17-Jul-2018	09-Jan-2019	✓
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,							
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)		13-Jul-2018	17-Jul-2018	10-Aug-2018	✓	18-Jul-2018	10-Aug-2018	✓
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,							
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)		13-Jul-2018	16-Jul-2018	10-Aug-2018	✓	17-Jul-2018	23-Jul-2018	✓
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,							
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)		13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	18-Jul-2018	31-Jul-2018	✓
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,							
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)		13-Jul-2018	16-Jul-2018	10-Aug-2018	✓	19-Jul-2018	10-Aug-2018	✓
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,							
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)		13-Jul-2018	16-Jul-2018	27-Jul-2018	✓	17-Jul-2018	25-Aug-2018	✓
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,							
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)		13-Jul-2018	16-Jul-2018	20-Jul-2018	✓	18-Jul-2018	20-Jul-2018	✓
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,							
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,	13-Jul-2018	16-Jul-2018	20-Jul-2018	✔	18-Jul-2018	20-Jul-2018	✔
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,	13-Jul-2018	16-Jul-2018	20-Jul-2018	✔	18-Jul-2018	20-Jul-2018	✔
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,	13-Jul-2018	16-Jul-2018	27-Jul-2018	✔	17-Jul-2018	25-Aug-2018	✔
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,	13-Jul-2018	16-Jul-2018	27-Jul-2018	✔	17-Jul-2018	25-Aug-2018	✔
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,	13-Jul-2018	16-Jul-2018	27-Jul-2018	✔	17-Jul-2018	25-Aug-2018	✔
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,	13-Jul-2018	16-Jul-2018	27-Jul-2018	✔	17-Jul-2018	25-Aug-2018	✔
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,	13-Jul-2018	16-Jul-2018	27-Jul-2018	✔	17-Jul-2018	25-Aug-2018	✔
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-ENV-BH012_1.0,	NEL-ENV-BH012_1.5,	13-Jul-2018	16-Jul-2018	20-Jul-2018	✔	18-Jul-2018	20-Jul-2018	✔
NEL-ENV-BH016_0.5,	NEL-ENV-BH016_1.5,							
NEL-ENV-BH018_0.5,	NEL-ENV-BH018_1.5							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-ENV-BH012_1.0, NEL-ENV-BH016_0.5, NEL-ENV-BH018_0.5,	NEL-ENV-BH012_1.5, NEL-ENV-BH016_1.5, NEL-ENV-BH018_1.5	13-Jul-2018	16-Jul-2018	27-Jul-2018	✔	17-Jul-2018	25-Aug-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-ENV-BH012_1.0, NEL-ENV-BH016_0.5, NEL-ENV-BH018_0.5,	NEL-ENV-BH012_1.5, NEL-ENV-BH016_1.5, NEL-ENV-BH018_1.5	13-Jul-2018	16-Jul-2018	20-Jul-2018	✔	18-Jul-2018	20-Jul-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	FB308	13-Jul-2018	----	----	----	17-Jul-2018	13-Jul-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Natural (EG020B-F)	FB308	13-Jul-2018	----	----	----	17-Jul-2018	09-Jan-2019	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F)	FB308	13-Jul-2018	----	----	----	19-Jul-2018	10-Aug-2018	✔
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	FB308	13-Jul-2018	----	----	----	17-Jul-2018	10-Aug-2018	✔
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)	FB308	13-Jul-2018	17-Jul-2018	20-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
EP068A: Organochlorine Pesticides (OC)								
Amber Glass Bottle - Unpreserved (EP068)	FB308	13-Jul-2018	17-Jul-2018	20-Jul-2018	✔	17-Jul-2018	26-Aug-2018	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)	FB308	13-Jul-2018	17-Jul-2018	27-Jul-2018	✔	19-Jul-2018	27-Jul-2018	✔
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB308	13-Jul-2018	17-Jul-2018	27-Jul-2018	✔	19-Jul-2018	27-Jul-2018	✔
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB308	13-Jul-2018	17-Jul-2018	27-Jul-2018	✔	19-Jul-2018	27-Jul-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)								
RB308,	FB308	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	19-Jul-2018	27-Jul-2018	✓
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
RB308,	FB308	13-Jul-2018	17-Jul-2018	20-Jul-2018	✓	17-Jul-2018	26-Aug-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))								
RB308,	FB308	13-Jul-2018	17-Jul-2018	20-Jul-2018	✓	17-Jul-2018	26-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
RB308,	FB308	13-Jul-2018	17-Jul-2018	20-Jul-2018	✓	17-Jul-2018	26-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RB308,	FB308,	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	19-Jul-2018	27-Jul-2018	✓
TB308								
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
RB308,	FB308	13-Jul-2018	17-Jul-2018	20-Jul-2018	✓	17-Jul-2018	26-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RB308,	FB308,	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	19-Jul-2018	27-Jul-2018	✓
TB308								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
RB308,	FB308,	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	19-Jul-2018	27-Jul-2018	✓
TB308								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	3	25	12.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	2	25	8.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1811371**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **K HOLDEN**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **7**
No. of samples analysed : **5**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 17-Jul-2018 12:20
Date Analysis Commenced : 18-Jul-2018
Issue Date : 23-Jul-2018 15:20



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EK040T: EM1811349-2 Poor matrix spike recovery for Total Fluoride due to sample matrix. Confirmed by re-extraction and re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NELBH190_0.5	NELBH190_1.5	----	----	----
Client sampling date / time					16-Jul-2018 09:00	16-Jul-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1811371-002	EM1811371-004	-----	-----	-----
				Result	Result		----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.6	7.0	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		18.7	24.7	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		8	14	----	----	----
Lead	7439-92-1	5	mg/kg		12	12	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		13	30	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		12	31	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		320	350	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NELBH190_0.5	NELBH190_1.5	----	----	----
Client sampling date / time					16-Jul-2018 09:00	16-Jul-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1811371-002	EM1811371-004	-----	-----	-----
				Result	Result		----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NELBH190_0.5	NELBH190_1.5	----	----	----
				Client sampling date / time	16-Jul-2018 09:00	16-Jul-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1811371-002	EM1811371-004	-----	-----	-----
					Result	Result	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NELBH190_0.5	NELBH190_1.5	----	----	----
Client sampling date / time					16-Jul-2018 09:00	16-Jul-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1811371-002	EM1811371-004	-----	-----	-----
				Result	Result		----	----	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NELBH190_0.5	NELBH190_1.5	----	----	----
Client sampling date / time					16-Jul-2018 09:00	16-Jul-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1811371-002	EM1811371-004	-----	-----	-----
				Result	Result		----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		73.1	70.1	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		98.0	88.0	----	----	----
Toluene-D8	2037-26-5	0.1	%		71.1	64.8	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		94.6	87.9	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		69.1	66.9	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		53.4	71.9	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		108	101	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		87.0	78.7	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		78.8	71.2	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		71.2	82.9	----	----	----
Anthracene-d10	1719-06-8	0.025	%		80.9	85.7	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		86.8	91.7	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB133	RB133	TB133	----	----
Client sampling date / time				16-Jul-2018 09:00	16-Jul-2018 09:00	16-Jul-2018 09:00	----	----
Compound	CAS Number	LOR	Unit	EM1811371-005	EM1811371-006	EM1811371-007	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.51	5.57	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB133	RB133	TB133	----	----
Client sampling date / time					16-Jul-2018 09:00	16-Jul-2018 09:00	16-Jul-2018 09:00	----	----
Compound	CAS Number	LOR	Unit		EM1811371-005	EM1811371-006	EM1811371-007	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB133	RB133	TB133	----	----
Client sampling date / time					16-Jul-2018 09:00	16-Jul-2018 09:00	16-Jul-2018 09:00	----	----
Compound	CAS Number	LOR	Unit		EM1811371-005	EM1811371-006	EM1811371-007	-----	-----
					Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,6-Dichlorophenol	87-65-0	2	µg/L		<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L		<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L		<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L		<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L		<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L		<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L		<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	4	µg/L		<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L		<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L		<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L		<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L		<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L		<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L		<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L		<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L		<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L		<50	<50	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L		<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB133	RB133	TB133	----	----
Client sampling date / time					16-Jul-2018 09:00	16-Jul-2018 09:00	16-Jul-2018 09:00	----	----
Compound	CAS Number	LOR	Unit		EM1811371-005	EM1811371-006	EM1811371-007	-----	-----
				Result	Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		85.7	89.1	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		96.8	92.4	----	----	----
Toluene-D8	2037-26-5	5	%		90.5	84.4	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		104	98.1	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		29.4	31.4	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		73.1	71.4	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		70.1	68.1	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		87.9	87.7	----	----	----
Anthracene-d10	1719-06-8	1.0	%		86.8	89.6	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		98.3	101	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB133	RB133	TB133	----	----
Client sampling date / time					16-Jul-2018 09:00	16-Jul-2018 09:00	16-Jul-2018 09:00	----	----
Compound	CAS Number	LOR	Unit		EM1811371-005	EM1811371-006	EM1811371-007	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		29.2	29.2	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		73.2	74.2	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		70.4	68.4	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		80.9	81.7	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		79.9	80.1	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		71.9	82.6	----	----	----
Anthracene-d10	1719-06-8	0.25	%		88.5	90.3	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		86.8	104	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		95.0	90.2	86.4	----	----
Toluene-D8	2037-26-5	2	%		93.6	87.2	84.9	----	----
4-Bromofluorobenzene	460-00-4	2	%		117	110	103	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		<i>Recovery Limits (%)</i>	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

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Environmental Division
Melbourne
Work Order Reference
EM1811371



Telephone - 67-2-8546 9500

Sampled by:	K. HOLDEN	Date/Time:	16/7	Relinquished by:		Date/Time:	
Received by:	core shed	Date/Time:	16/7 15:00	Relinquished by:		Date/Time:	
Received by Courier:	Nigel [ALS]	Date/Time:	17/7/18 12-20	Relinquished by:		Date/Time:	
Received by Lab:		Date/Time:					
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)						

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Tuesday, 17 July 2018 3:53 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: EM1811371-GHDSER - 31350060910
Attachments: EM1811371_COC.PDF

Hi Shirley,

Please analyse the following at standard TAT:

EM1811371:

NEL-BH190_0.5m = IWRG621

NEL-BH190_1.5m = IWRG621

FB133 = IWRG621 water equivalent

RB133 = IWRG621 water equivalent

TB133 = Volatile TPH/BTEX (if received)

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | **V:** 318948 | **M:** 0478 797 000 | **E:** kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>

Sent: Tuesday, 17 July 2018 3:34 PM

To: Kory Auch <Kory.Auch@ghd.com>; David Quinn <David.Quinn@ghd.com>

Subject: FW: EM1811371-GHDSER - 31350060910

Hi Kory & David

Please let me know the analysis required for the attached.

Thanks

Shirley

Shirley LeCornu

Client Services Officer – Springvale

Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1811371

<p>Client : GHD PTY LTD</p> <p>Contact : MR DAVID QUINN</p> <p>Address : LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001</p> <p>E-mail : david.quinn@ghd.com</p> <p>Telephone : ----</p> <p>Facsimile : ----</p> <p>Project : 31350060910</p> <p>Order number :</p> <p>C-O-C number : ----</p> <p>Site :</p> <p>Sampler : K HOLDEN</p>	<p>Laboratory : Environmental Division Melbourne</p> <p>Contact : Shirley LeCornu</p> <p>Address : 4 Westall Rd Springvale VIC Australia 3171</p> <p>E-mail : shirley.lecornu@Alsglobal.com</p> <p>Telephone : +61-3-8549 9630</p> <p>Facsimile : +61-3-8549 9626</p> <p>Page : 1 of 3</p> <p>Quote number : EM2018GHDSE0003 (ME/124/18 - North East Link)</p> <p>QC Level : NEPM 2013 B3 & ALS QC Standard</p>
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Dates

Date Samples Received : 17-Jul-2018 12:20	Issue Date : 17-Jul-2018
Client Requested Due Date : 24-Jul-2018	Scheduled Reporting Date : 24-Jul-2018

Delivery Details

Mode of Delivery : Carrier	Security Seal : Intact.
No. of coolers/boxes : 1	Temperature : 2.4°C - Ice present
Receipt Detail :	No. of samples received / analysed : 7 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1811371-001	16-Jul-2018 09:00	NELBH190_0.2	✓		
EM1811371-002	16-Jul-2018 09:00	NELBH190_0.5		✓	✓
EM1811371-003	16-Jul-2018 09:00	NELBH190_1.0	✓		
EM1811371-004	16-Jul-2018 09:00	NELBH190_1.5		✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1811371-005	16-Jul-2018 09:00	FB133	✓	
EM1811371-006	16-Jul-2018 09:00	RB133	✓	
EM1811371-007	16-Jul-2018 09:00	TB133		✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
Client Sample ID(s)							
EA005-P: pH by PC Titrator							
FB133	Clear Plastic Bottle - Natural	----	16-Jul-2018	17-Jul-2018	✗	----	----
RB133	Clear Plastic Bottle - Natural	----	16-Jul-2018	17-Jul-2018	✗	----	----

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1811371	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 17-Jul-2018
Order number	:	Date Analysis Commenced	: 18-Jul-2018
C-O-C number	: ----	Issue Date	: 23-Jul-2018
Sampler	: K HOLDEN		
Site	:		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 7		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1808524)									
EM1811354-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.3	6.5	3.12	0% - 20%
EM1811402-002	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.6	7.6	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1808539)									
EM1811360-025	Anonymous	EA055: Moisture Content	----	0.1	%	14.7	14.4	2.11	0% - 50%
EM1811360-041	Anonymous	EA055: Moisture Content	----	0.1	%	4.3	4.6	6.31	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1809051)									
EM1811370-063	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	6	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	20	27.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	26	25	4.65	No Limit
EM1811413-010	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	11	8	34.2	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1809051) - continued									
EM1811413-010	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	12	8	42.7	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1809052)									
EM1811370-063	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811413-010	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1809147)									
EM1811264-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811264-011	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1813423)									
EM1811327-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	1	<1	0.00	No Limit
EM1811371-002	NELBH190_0.5	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1808521)									
EM1811349-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	<40	<40	0.00	No Limit
EM1811405-003	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	230	210	6.33	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1809029)									
EM1811371-002	NELBH190_0.5	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811413-010	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1808467)									
EM1811349-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811398-002	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP074H: Naphthalene (QC Lot: 1808467)									
EM1811349-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1811398-002	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1808467)									
EM1811349-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1808467) - continued									
EM1811349-001	Anonymous	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1811398-002	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1809027)							
EM1811371-002	NELBH190_0.5	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1809027) - continued									
EM1811371-002	NELBH190_0.5	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1811413-010	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1809027)									
EM1811371-002	NELBH190_0.5	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1811413-010	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1809027)									
EM1811371-002	NELBH190_0.5	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1809027) - continued									
EM1811371-002	NELBH190_0.5	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1811413-010	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1809027)									
EM1811371-002	NELBH190_0.5	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1809027) - continued									
EM1811371-002	NELBH190_0.5	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1811413-010	Anonymous	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1808467)									
EM1811349-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1811398-002	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1809028)									
EM1811371-002	NELBH190_0.5	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1811413-010	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

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Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1809028) - continued									
EM1811413-010	Anonymous	EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1808467)									
EM1811349-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1811398-002	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1809028)									
EM1811371-002	NELBH190_0.5	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1811413-010	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1808461)									
EM1811357-016	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	3.60	3.54	1.68	0% - 20%
EM1811373-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.27	8.26	0.121	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1809220)									
EM1811389-007	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.078	0.075	3.42	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.007	0.007	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1811366-012	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1809222)									
EM1811371-005	FB133	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 1809221)									
EM1811395-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1811366-012	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1809233)									
EM1811347-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1811426-008	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1809074)									
EM1811347-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1811407-006	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.044	0.043	0.00	0% - 50%
EK040P: Fluoride by PC Titrator (QC Lot: 1808458)									
EM1811373-005	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.6	0.6	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1808216)									
EM1811312-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1808216)									
EM1811312-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1808216)									
EM1811312-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1808216)									
EM1811312-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1808215)									
EM1811371-006	RB133	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1811312-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1808215)									

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 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1808215) - continued									
EM1811371-006	RB133	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1811312-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1808215)									
EM1811371-006	RB133	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1811312-001	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1809051)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.2	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	89.7	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	90.5	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	93.5	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	90.7	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	98.2	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	97.2	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	91.4	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	89.0	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	98.8	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1809052)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	93.0	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1809147)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	92.3	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1813423)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	97.7	80	110
EK040T: Fluoride Total (QCLot: 1808521)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	95.5	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1809029)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	76.0	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1808467)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	90.1	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	80.4	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	71.5	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	71.9	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	81.8	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	75.2	74	114
EP074H: Naphthalene (QCLot: 1808467)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	89.4	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1808467)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	126	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	95.7	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1808467) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	103	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	98.5	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	97.6	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	106	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	104	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	94.8	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	110	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	95.0	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	89.4	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	82.5	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	99.0	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	83.5	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	80.7	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	82.4	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	97.6	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	98.1	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	93.2	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1809027)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	88.4	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	85.9	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	87.1	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	84.0	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	72.3	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	77.0	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	78.4	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	75.5	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	100	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1809027)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	61.8	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	82.6	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	84.4	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	85.9	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	78.4	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	101	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	63.6	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	85.6	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	81.7	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	83.5	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1809027)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	92.7	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	88.9	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	68.0	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	86.2	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	90.0	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	95.4	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	96.4	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	106	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	82.8	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	83.9	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	95.0	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	85.0	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	97.7	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	97.0	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	79.6	55	137
EP075I: Organochlorine Pesticides (QCLot: 1809027)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	97.6	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	101	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	96.0	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	100	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	96.3	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	93.9	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	97.0	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	99.7	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	100	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	97.6	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	80.2	63	136
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	109	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	106	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	118	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	# 53.3	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	104	66	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	89.3	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	92.5	63	139
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	93.7	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	77.1	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1808467)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	73.2	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1809220)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.3	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.3	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.5	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.6	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	96.8	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.7	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.9	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	104	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.6	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1809222)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	97.1	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1809221)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.2	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1809233)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1809074)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	92.3	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1808458)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	104	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1808450)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	84.7	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1808216)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1808216) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	110	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1808216)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	106	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	103	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	100	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	106	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	109	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	112	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	109	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	108	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	109	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	107	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	107	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	103	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	108	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	108	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1808216)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	108	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	109	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	104	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	109	62	119
EP074G: Trihalomethanes (QCLot: 1808216)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	107	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1808451)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	89.2	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	87.6	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	89.6	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	89.8	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	88.5	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	106	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	94.4	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	92.2	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	96.3	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	95.9	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	90.4	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	90.0	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	91.2	56	126

Method Blank (MB) Report

Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
	LCS	Low	High

Method: Compound	CAS Number	LOR	Unit	Result	Concentration	Upper Recovery (%)	Lower Recovery (%)	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1808451) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	86.8	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	86.3	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	87.0	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1808453)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	83.1	44	114
EP075-EM: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	70.4	53	121
EP075-EM: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	101	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	92.2	57	116
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	120	51	121
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	96.2	56	120
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	87.3	41	125
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	89.4	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	73.6	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1808453)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	30.7	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	72.9	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	60.6	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	74.5	53	123
EP075-EM: 2.4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	79.2	52	128
EP075-EM: 2.4-Dinitrophenol	51-28-5	100	µg/L	<100	120 µg/L	82.5	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	38.9	13	60
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	80.2	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	83.1	55	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	120	32	135
EP075I: Organochlorine Pesticides (QCLot: 1808453)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	94.0	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	93.2	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	89.9	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	87.5	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	88.7	60	132
EP075-EM: 4.4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	99.9	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	97.8	59	130
EP075-EM: 4.4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	93.7	62	136
EP075-EM: 4.4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	96.3	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1808215)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	92.0	68	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1808452)								

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1809051)							
EM1811370-065	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	102	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.9	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	96.5	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	93.7	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	92.7	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	91.4	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	91.9	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1809052)							
EM1811370-065	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	97.9	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1809147)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1809147) - continued							
EM1811264-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	85.2	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1813423)							
EM1811327-003	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	94.2	77	113
EK040T: Fluoride Total (QCLot: 1808521)							
EM1811349-002	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	# 48.2	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1809029)							
EM1811413-006	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	79.1	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1808467)							
EM1811349-002	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	89.3	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	88.3	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1808467)							
EM1811349-002	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	99.2	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	85.8	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	85.4	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1809027)							
EM1811371-004	NELBH190_1.5	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	85.3	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	67.7	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	42.5	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1809027)							
EM1811371-004	NELBH190_1.5	EP075-EM: Phenol	108-95-2	1 mg/kg	66.5	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	63.6	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1809027)							
EM1811371-004	NELBH190_1.5	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	94.5	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	98.4	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1808467)							
EM1811349-002	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	81.0	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1809028)							
EM1811402-002	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	91.3	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	104	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	106	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1808467)							
EM1811349-002	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	76.6	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1809028)							
EM1811402-002	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	95.3	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	104	67	121

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 Work Order : EM1811371
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1809028) - continued							
EM1811402-002	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	113	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1809220)							
EM1811366-012	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	98.4	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	92.5	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	94.4	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	98.2	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	95.7	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	97.1	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1809221)							
EM1811371-005	FB133	EG035F: Mercury	7439-97-6	0.01 mg/L	106	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1809233)							
EM1811371-005	FB133	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	93.8	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1809074)							
EM1811351-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	84.5	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1808458)							
EM1811371-006	RB133	EK040P: Fluoride	16984-48-8	5 mg/L	109	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1808216)							
EM1811312-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	80.2	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	79.6	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1808216)							
EM1811312-002	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	92.1	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1808215)							
EM1811312-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	74.7	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1808215)							
EM1811312-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	73.4	44	122
EP080: BTEXN (QCLot: 1808215)							
EM1811312-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	87.0	68	130
		EP080: Toluene	108-88-3	20 µg/L	97.5	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1811371	Page	: 1 of 12
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 17-Jul-2018
Site	:	Issue Date	: 23-Jul-2018
Sampler	: K HOLDEN	No. of samples received	: 7
Order number	:	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- Laboratory Control outliers exist - please see following pages for full details.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075I: Organochlorine Pesticides	QC-1809027-001	----	Endrin	72-20-8	53.3 %	55-148%	Recovery less than lower control limit
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EM1811370--065	Anonymous	Lead	7439-92-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK040T: Fluoride Total	EM1811349--002	Anonymous	Fluoride	16984-48-8	48.2 %	70-130%	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
FB133,	RB133	----	----	----	18-Jul-2018	16-Jul-2018	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	7	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	7	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	18-Jul-2018	18-Jul-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	----	----	----	18-Jul-2018	30-Jul-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	12-Jan-2019	✓	18-Jul-2018	12-Jan-2019	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	13-Aug-2018	✓	19-Jul-2018	13-Aug-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	13-Aug-2018	✓	18-Jul-2018	25-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	19-Jul-2018	30-Jul-2018	✓	20-Jul-2018	02-Aug-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	13-Aug-2018	✓	19-Jul-2018	13-Aug-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	30-Jul-2018	✓	19-Jul-2018	27-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	30-Jul-2018	✓	19-Jul-2018	27-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	30-Jul-2018	✓	19-Jul-2018	27-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	30-Jul-2018	✓	19-Jul-2018	27-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	30-Jul-2018	✓	19-Jul-2018	27-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NELBH190_0.5,	NELBH190_1.5	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	19-Jul-2018	23-Jul-2018	✓

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) FB133,	RB133	16-Jul-2018	----	----	----	18-Jul-2018	16-Jul-2018	✘
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG020B-F) FB133,	RB133	16-Jul-2018	----	----	----	19-Jul-2018	12-Jan-2019	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) FB133,	RB133	16-Jul-2018	----	----	----	20-Jul-2018	13-Aug-2018	✔
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) FB133,	RB133	16-Jul-2018	----	----	----	18-Jul-2018	13-Aug-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) FB133,	RB133	16-Jul-2018	----	----	----	18-Jul-2018	30-Jul-2018	✔
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) FB133,	RB133	16-Jul-2018	----	----	----	18-Jul-2018	13-Aug-2018	✔
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) FB133,	RB133	16-Jul-2018	18-Jul-2018	23-Jul-2018	✔	18-Jul-2018	27-Aug-2018	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) FB133,	RB133	16-Jul-2018	18-Jul-2018	30-Jul-2018	✔	19-Jul-2018	30-Jul-2018	✔



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB133, RB133	16-Jul-2018	18-Jul-2018	30-Jul-2018	✓	19-Jul-2018	30-Jul-2018	✓	
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB133, RB133	16-Jul-2018	18-Jul-2018	30-Jul-2018	✓	19-Jul-2018	30-Jul-2018	✓	
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) FB133, RB133	16-Jul-2018	18-Jul-2018	30-Jul-2018	✓	19-Jul-2018	30-Jul-2018	✓	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB133, RB133	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	18-Jul-2018	27-Aug-2018	✓	
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB133, RB133	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	18-Jul-2018	27-Aug-2018	✓	
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB133, RB133	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	18-Jul-2018	27-Aug-2018	✓	
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) FB133, RB133	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	18-Jul-2018	27-Aug-2018	✓	
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) FB133, RB133	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	18-Jul-2018	27-Aug-2018	✓	
Amber VOC Vial - Sulfuric Acid (EP080) FB133, RB133, TB133	16-Jul-2018	18-Jul-2018	30-Jul-2018	✓	19-Jul-2018	30-Jul-2018	✓	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) FB133, RB133	16-Jul-2018	18-Jul-2018	23-Jul-2018	✓	18-Jul-2018	27-Aug-2018	✓	
Amber VOC Vial - Sulfuric Acid (EP080) FB133, RB133, TB133	16-Jul-2018	18-Jul-2018	30-Jul-2018	✓	19-Jul-2018	30-Jul-2018	✓	
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) FB133, RB133, TB133	16-Jul-2018	18-Jul-2018	30-Jul-2018	✓	19-Jul-2018	30-Jul-2018	✓	



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	8	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	2	10	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	3	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	7	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	3	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	7	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1811453**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **K HOLDEN**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **6**
No. of samples analysed : **5**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 18-Jul-2018 13:55
Date Analysis Commenced : 19-Jul-2018
Issue Date : 24-Jul-2018 09:49



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020-F: Tin results for EM1811453 #5 has been confirmed by re-preparation and re-analysis.
- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH192_0.2	NEL-BH192_1.0	----	----	----
Client sampling date / time					18-Jul-2018 09:00	18-Jul-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1811453-001	EM1811453-003	-----	-----	-----
					Result	Result	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.4	7.5	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.6	11.6	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg		24	23	----	----	----
Lead	7439-92-1	5	mg/kg		24	15	----	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg		42	48	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		71	82	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		400	580	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH192_0.2	NEL-BH192_1.0	----	----	----
Client sampling date / time					18-Jul-2018 09:00	18-Jul-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1811453-001	EM1811453-003	-----	-----	-----
				Result	Result		----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH192_0.2	NEL-BH192_1.0	----	----	----
Client sampling date / time				18-Jul-2018 09:00	18-Jul-2018 09:00	----	----	----	
Compound	CAS Number	LOR	Unit	EM1811453-001	EM1811453-003	-----	-----	-----	
				Result	Result	----	----	----	

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	<5	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH192_0.2	NEL-BH192_1.0	----	----	----
Client sampling date / time				18-Jul-2018 09:00	18-Jul-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1811453-001	EM1811453-003	-----	-----	-----
				Result	Result	----	----	----
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH192_0.2	NEL-BH192_1.0	----	----	----
Client sampling date / time					18-Jul-2018 09:00	18-Jul-2018 09:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1811453-001	EM1811453-003	-----	-----	-----
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		80.9	86.2	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		76.9	73.1	----	----	----
Toluene-D8	2037-26-5	0.1	%		69.2	64.4	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		88.3	89.3	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		99.2	105	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		80.7	87.9	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		112	120	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		98.1	108	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		83.6	86.7	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		79.8	86.1	----	----	----
Anthracene-d10	1719-06-8	0.025	%		96.4	112	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		117	119	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB134	RB134	TB134	----	----
Client sampling date / time				18-Jul-2018 11:00	18-Jul-2018 11:00	18-Jul-2018 11:00	----	----
Compound	CAS Number	LOR	Unit	EM1811453-004	EM1811453-005	EM1811453-006	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.35	9.25	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	0.002	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB134	RB134	TB134	----	----
Client sampling date / time					18-Jul-2018 11:00	18-Jul-2018 11:00	18-Jul-2018 11:00	----	----
Compound	CAS Number	LOR	Unit		EM1811453-004	EM1811453-005	EM1811453-006	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB134	RB134	TB134	----	----
Client sampling date / time					18-Jul-2018 11:00	18-Jul-2018 11:00	18-Jul-2018 11:00	----	----
Compound	CAS Number	LOR	Unit		EM1811453-004	EM1811453-005	EM1811453-006	-----	-----
					Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2,6-Dichlorophenol	87-65-0	2	µg/L		<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L		<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L		<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L		<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L		<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L		<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L		<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	4	µg/L		<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L		<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L		<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L		<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L		<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L		<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L		<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L		<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L		<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L		<50	<50	----	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L		<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB134	RB134	TB134	----	----
Client sampling date / time					18-Jul-2018 11:00	18-Jul-2018 11:00	18-Jul-2018 11:00	----	----
Compound	CAS Number	LOR	Unit		EM1811453-004	EM1811453-005	EM1811453-006	-----	-----
				Result	Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		92.4	85.5	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		75.2	92.6	----	----	----
Toluene-D8	2037-26-5	5	%		78.6	85.9	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		87.2	98.8	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		30.7	30.0	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		75.8	70.7	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		67.2	63.9	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		97.4	93.0	----	----	----
Anthracene-d10	1719-06-8	1.0	%		97.3	92.1	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		110	103	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB134	RB134	TB134	----	----
Client sampling date / time					18-Jul-2018 11:00	18-Jul-2018 11:00	18-Jul-2018 11:00	----	----
Compound	CAS Number	LOR	Unit		EM1811453-004	EM1811453-005	EM1811453-006	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		21.5	26.8	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		55.6	66.4	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		54.0	54.4	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		69.9	72.9	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		74.4	79.6	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		80.3	76.5	----	----	----
Anthracene-d10	1719-06-8	0.25	%		76.1	80.4	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		80.8	84.9	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		79.8	98.3	87.9	----	----
Toluene-D8	2037-26-5	2	%		75.5	84.5	82.0	----	----
4-Bromofluorobenzene	460-00-4	2	%		92.3	104	99.4	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



Page ____ of ____

[illegible]

Sampled by:	K. HOLDEN	Date/Time:	18/7/18	Relinquished by:		Date/Time:	
Received by:	LAB	Date/Time:	18/7/18	Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Tammy	Date/Time:	13:55, 18-7-18				
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)						

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Wednesday, 18 July 2018 3:01 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: ON HOLD - EM1811453 - GHD N/E Link
Attachments: COC.PDF

Hi Shirley,

Please analyse the following at standard TAT:

EM1811453:

NEL-BH192_0.2m = IWRG621

NEL-BH192_1.0m = IWRG621

FB134 = IWRG621 water equivalent

RB134 = IWRG621 water equivalent

TB134 = Volatile TPH/BTEX

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | **V:** 318948 | **M:** 0478 797 000 | **E:** kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>

Sent: Wednesday, 18 July 2018 2:39 PM

To: David Quinn <David.Quinn@ghd.com>; Kory Auch <Kory.Auch@ghd.com>

Subject: FW: ON HOLD - EM1811453 - GHD N/E Link

Hi David & Kory

Please let me know analysis required when you get a chance.

Thanks

Shirley

Shirley LeCornu

Client Services Officer – Springvale
Environmental

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1811453**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: K HOLDEN		

Dates

Date Samples Received	: 18-Jul-2018 13:55	Issue Date	: 19-Jul-2018
Client Requested Due Date	: 25-Jul-2018	Scheduled Reporting Date	: 25-Jul-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 11.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 6 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Dissolved Mercury by FIMS : EG035F		
FB134	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB134	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite A : EG020A-F		
FB134	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB134	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
Dissolved Metals by ICP-MS - Suite B : EG020B-F		
FB134	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered
RB134	- Clear Plastic Bottle - Nitric Acid; Unspecified	- Clear Plastic Bottle - Nitric Acid; Filtered

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-16 IWRG 621
EM1811453-001	18-Jul-2018 09:00	NEL-BH192_0.2		✓	✓
EM1811453-002	18-Jul-2018 09:00	NEL-BH192_0.5	✓		
EM1811453-003	18-Jul-2018 09:00	NEL-BH192_1.0		✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - 448.3 Water VIC EPA IWRG621 - Water Equivalent Suite	WATER - W-18 TRH(C6 - C9)/BTEXN
EM1811453-004	18-Jul-2018 11:00	FB134	✓	
EM1811453-005	18-Jul-2018 11:00	RB134	✓	
EM1811453-006	18-Jul-2018 11:00	TB134		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



Requested Deliverables

ALL ACCOUNTS

- A4 - AU Tax Invoice (INV)

Email ap-fss@ghd.com

DAVID QUINN

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESdat (ESRN_ESDAT)
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)

Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com
Email david.quinn@ghd.com

GHD LAB REPORTS

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESdat (ESRN_ESDAT)

Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com
Email GHDLabreports@ghd.com

QUALITY CONTROL REPORT

Work Order	: EM1811453	Page	: 1 of 17
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 18-Jul-2018
Order number	: ----	Date Analysis Commenced	: 19-Jul-2018
C-O-C number	: ----	Issue Date	: 24-Jul-2018
Sampler	: K HOLDEN		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 6		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1814059)									
EM1811453-001	NEL-BH192_0.2	EA001: pH (CaCl2)	----	0.1	pH Unit	6.4	6.2	3.17	0% - 20%
EM1811470-030	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.1	7.2	1.40	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1814590)									
EM1811453-001	NEL-BH192_0.2	EA055: Moisture Content	----	0.1	%	13.6	13.6	0.00	0% - 50%
EM1811503-003	Anonymous	EA055: Moisture Content	----	0.1	%	26.5	26.8	0.804	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1814120)									
EM1811453-001	NEL-BH192_0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	42	41	0.00	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	25	6.05	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	24	20	19.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Zinc	7440-66-6	5	mg/kg	71	64	11.1	0% - 50%		
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1814119)									
EM1811453-001	NEL-BH192_0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1814554)									
EM1811453-001	NEL-BH192_0.2	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1814553)									
EM1811453-001	NEL-BH192_0.2	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1811504-014	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	29	25	16.8	0% - 20%
EK040T: Fluoride Total (QC Lot: 1813835)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EK040T: Fluoride Total (QC Lot: 1813835) - continued											
EM1811453-001	NEL-BH192_0.2	EK040T: Fluoride	16984-48-8	40	mg/kg	400	390	3.78	0% - 50%		
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1813846)											
EM1811385-004	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit		
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1813833)											
EM1811453-001	NEL-BH192_0.2	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit		
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
			106-42-3								
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP074H: Naphthalene (QC Lot: 1813833)											
EM1811453-001	NEL-BH192_0.2	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit		
EP074I: Volatile Halogenated Compounds (QC Lot: 1813833)											
EM1811453-001	NEL-BH192_0.2	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit		
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit		
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit		
				EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1813844)									
EM1811385-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1813844) - continued									
EM1811385-004	Anonymous	EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1813844)									
EM1811385-004	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit		
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1813844)									
EM1811385-004	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1813844)									
EM1811385-004	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1813844) - continued									
EM1811385-004	Anonymous	EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1813833)									
EM1811453-001	NEL-BH192_0.2	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1813845)									
EM1811385-004	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	990	930	6.36	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	950	950	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1813833)									
EM1811453-001	NEL-BH192_0.2	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1813845)									
EM1811385-004	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	1580	1540	2.99	0% - 50%
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	480	480	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1816358)									
EM1811453-005	RB134	EA005-P: pH Value	----	0.01	pH Unit	9.25	8.54	7.98	0% - 20%
EM1811478-010	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	3.48	3.41	2.03	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1816682)									
EM1811021-030	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1816682) - continued									
EM1811021-030	Anonymous	EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.009	54.3	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1811453-004	FB134	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1816684)									
EM1811453-004	FB134	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1816681)									
EM1811021-030	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1811453-004	FB134	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1818468)									
EM1811453-004	FB134	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1817072)									
EM1811537-003	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	103	104	0.826	0% - 20%
EM1811539-013	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1816359)									
EM1811453-005	RB134	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1811478-010	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	39.0	39.9	2.28	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1814847)									
EM1811496-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1811453-004	FB134	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1814847)									
EM1811496-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1814847) - continued									
EM1811496-001	Anonymous	EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1811453-004	FB134	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074F: Halogenated Aromatic Compounds (QC Lot: 1814847)							
EM1811496-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1811453-004	FB134	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1814847)									
EM1811496-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1811453-004	FB134	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1814848)									
EM1811453-004	FB134	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1814848)									
EM1811453-004	FB134	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1814848)									
EM1811453-004	FB134	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1814848) - continued									
EM1811453-004	FB134	EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit		Result	Spike	Spike Recovery (%)	Recovery Limits (%)
				Concentration		LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1814120)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	92.7	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	88.9	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.0	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	92.8	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	97.7	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	103	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	91.3	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	92.1	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	94.7	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1814119)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.9	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1814554)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	84.6	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1814553)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	90.1	80	110
EK040T: Fluoride Total (QCLot: 1813835)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	93.8	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1813846)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	72.8	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1813833)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	78.0	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	77.2	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	74.7	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	73.9	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	80.0	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	76.8	74	114
EP074H: Naphthalene (QCLot: 1813833)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	85.6	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1813833)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	69.2	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	67.6	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1813833) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	82.2	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	70.5	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	78.8	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	79.5	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	73.8	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	74.9	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	86.6	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	82.8	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	86.8	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	76.3	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	83.4	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	93.8	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	69.7	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	81.1	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	77.3	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	79.0	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	72.6	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1813844)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	90.2	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	78.3	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	111	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	128	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	91.2	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	90.7	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	84.6	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	88.1	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	85.2	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1813844)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	90.5	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	85.8	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	88.1	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	83.8	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	82.9	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	12 mg/kg	124	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	75.6	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	67.8	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	70.3	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	82.5	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1813844)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	88.8	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	100	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	92.4	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	87.3	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	87.3	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	87.6	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	88.8	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	89.7	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	93.2	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	95.7	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	89.3	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	107	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	88.6	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	88.3	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	89.0	55	137
EP075I: Organochlorine Pesticides (QCLot: 1813844)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	89.2	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	87.5	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	91.0	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	89.6	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	93.2	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	85.7	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	86.6	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	86.2	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	86.2	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	86.2	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	84.7	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	91.3	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	88.6	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	75.9	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	87.2	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	92.1	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	94.5	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	92.4	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	88.7	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	89.3	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1813833)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	76.5	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1816682)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.6	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.7	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.8	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.6	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	101	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	102	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	100	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1816684)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	102	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1816681)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	86.3	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1818468)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	97.6	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1817072)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	96.4	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1816359)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	102	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1813795)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1.0	10 µg/L	76.2	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1814847)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1814847) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	95.6	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1814847)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	77.4	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	94.6	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	108	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	90.4	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	97.5	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	86.2	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	86.1	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	107	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	86.6	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	102	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	91.5	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	90.2	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	108	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	86.6	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1814847)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	95.8	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	92.5	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	94.3	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	92.7	62	119
EP074G: Trihalomethanes (QCLot: 1814847)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	99.6	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1813796)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	80.7	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	82.9	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	85.0	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	89.3	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	91.1	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	91.1	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	93.5	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	92.6	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	90.5	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	94.7	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	99.2	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	107	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	103	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1813796) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	92.8	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	92.4	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	93.7	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1813798)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	71.6	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	71.8	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	76.9	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	62.1	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	68.3	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	58.2	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	82.7	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	67.0	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	66.6	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1813798)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	27.6	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	60.5	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	52.3	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	81.3	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	76.1	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	60 µg/L	78.4	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	34.3	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	90.5	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	90.1	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	100	32	135
EP075I: Organochlorine Pesticides (QCLot: 1813798)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	71.6	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	85.3	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	76.6	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	81.0	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	81.8	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	77.4	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	81.7	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	77.3	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	81.3	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1813797)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	99.6	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	104	60	133



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1814554) - continued							
EM1811453-003	NEL-BH192_1.0	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	77.0	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1814553)							
EM1811453-003	NEL-BH192_1.0	EK026SF: Total Cyanide	57-12-5	20 mg/kg	81.8	77	113
EK040T: Fluoride Total (QCLot: 1813835)							
EM1811453-003	NEL-BH192_1.0	EK040T: Fluoride	16984-48-8	400 mg/kg	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1813846)							
EM1811385-010	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	63.6	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1813833)							
EM1811453-003	NEL-BH192_1.0	EP074-UT: Benzene	71-43-2	2 mg/kg	66.1	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	67.2	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1813833)							
EM1811453-003	NEL-BH192_1.0	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	56.3	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	61.8	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	71.2	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1813844)							
EM1811385-009	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	110	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	83.0	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	66.7	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1813844)							
EM1811385-009	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	52.6	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	93.4	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1813844)							
EM1811385-009	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	106	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	113	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1813833)							
EM1811453-003	NEL-BH192_1.0	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	53.0	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1813845)							
EM1811385-009	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	92.5	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	104	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	89.3	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1813833)							
EM1811453-003	NEL-BH192_1.0	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	51.6	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1813845)							
EM1811385-009	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	93.8	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	94.5	67	121

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 Work Order : EM1811453
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1813845) - continued							
EM1811385-009	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	88.0	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1816682)							
EM1811021-030	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	93.5	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	91.6	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.0	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.6	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	94.8	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	94.7	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1816681)							
EM1811021-031	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	86.2	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1818468)							
EM1811453-005	RB134	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	101	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1817072)							
EM1811453-005	RB134	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	97.3	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1816359)							
EM1811478-001	Anonymous	EK040P: Fluoride	16984-48-8	50 mg/L	92.8	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1814847)							
EM1811453-005	RB134	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	78.7	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	75.2	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1814847)							
EM1811453-005	RB134	EP074: Chlorobenzene	108-90-7	20 µg/L	87.8	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1814848)							
EM1811453-005	RB134	EP080: C6 - C9 Fraction	----	280 µg/L	69.3	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1814848)							
EM1811453-005	RB134	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	68.7	44	122
EP080: BTEXN (QCLot: 1814848)							
EM1811453-005	RB134	EP080: Benzene	71-43-2	20 µg/L	84.3	68	130
		EP080: Toluene	108-88-3	20 µg/L	87.7	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1811453	Page	: 1 of 12
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 18-Jul-2018
Site	: ----	Issue Date	: 24-Jul-2018
Sampler	: K HOLDEN	No. of samples received	: 6
Order number	:	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural FB134, RB134	----	----	----	20-Jul-2018	18-Jul-2018	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Container / Client Sample ID(s)							
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) NEL-BH192_0.2, NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	25-Jul-2018	✔	19-Jul-2018	19-Jul-2018	✔
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) NEL-BH192_0.2, NEL-BH192_1.0	18-Jul-2018	----	----	----	19-Jul-2018	01-Aug-2018	✔
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) NEL-BH192_0.2, NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	14-Jan-2019	✔	19-Jul-2018	14-Jan-2019	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	15-Aug-2018	✓	19-Jul-2018	15-Aug-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	15-Aug-2018	✓	19-Jul-2018	26-Jul-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	20-Jul-2018	02-Aug-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	15-Aug-2018	✓	20-Jul-2018	15-Aug-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	19-Jul-2018	28-Aug-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	25-Jul-2018	✓	20-Jul-2018	25-Jul-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	25-Jul-2018	✓	20-Jul-2018	25-Jul-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	25-Jul-2018	✓	20-Jul-2018	25-Jul-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	19-Jul-2018	28-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	19-Jul-2018	28-Aug-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	19-Jul-2018	28-Aug-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	19-Jul-2018	28-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	25-Jul-2018	✓	20-Jul-2018	25-Jul-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH192_0.2,	NEL-BH192_1.0	18-Jul-2018	19-Jul-2018	25-Jul-2018	✔	20-Jul-2018	25-Jul-2018	✔

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) FB134, RB134	18-Jul-2018	----	----	----	20-Jul-2018	18-Jul-2018	✖	
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) FB134, RB134	18-Jul-2018	----	----	----	20-Jul-2018	14-Jan-2019	✓	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) FB134, RB134	18-Jul-2018	----	----	----	23-Jul-2018	01-Aug-2018	✓	
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) FB134, RB134	18-Jul-2018	----	----	----	20-Jul-2018	15-Aug-2018	✓	
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) FB134, RB134	18-Jul-2018	----	----	----	20-Jul-2018	01-Aug-2018	✓	
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) FB134, RB134	18-Jul-2018	----	----	----	20-Jul-2018	15-Aug-2018	✓	
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) FB134, RB134	18-Jul-2018	19-Jul-2018	25-Jul-2018	✓	19-Jul-2018	28-Aug-2018	✓	
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) FB134, RB134	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	20-Jul-2018	01-Aug-2018	✓	
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB134, RB134	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	20-Jul-2018	01-Aug-2018	✓	
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB134, RB134	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	20-Jul-2018	01-Aug-2018	✓	
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) FB134, RB134	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	20-Jul-2018	01-Aug-2018	✓	



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB134, RB134	18-Jul-2018	19-Jul-2018	25-Jul-2018	✓	19-Jul-2018	28-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) FB134, RB134	18-Jul-2018	19-Jul-2018	25-Jul-2018	✓	19-Jul-2018	28-Aug-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) FB134, RB134	18-Jul-2018	19-Jul-2018	25-Jul-2018	✓	19-Jul-2018	28-Aug-2018	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075-EM) FB134, RB134	18-Jul-2018	19-Jul-2018	25-Jul-2018	✓	19-Jul-2018	28-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) FB134, RB134	18-Jul-2018	19-Jul-2018	25-Jul-2018	✓	19-Jul-2018	28-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB134, RB134, TB134	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	20-Jul-2018	01-Aug-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) FB134, RB134	18-Jul-2018	19-Jul-2018	25-Jul-2018	✓	19-Jul-2018	28-Aug-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB134, RB134, TB134	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	20-Jul-2018	01-Aug-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) FB134, RB134, TB134	18-Jul-2018	19-Jul-2018	01-Aug-2018	✓	20-Jul-2018	01-Aug-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **✖** = Quality Control frequency not within specification ; **✔** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	3	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1811715**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **12**
No. of samples analysed : **12**

Page : 1 of 8
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 12-Jul-2018 10:10
Date Analysis Commenced : 26-Jul-2018
Issue Date : 27-Jul-2018 15:44



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1811150.



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-LFB01_0.5m	NEL-LFB01_1.0m	NEL-LFB02_2.0m	NEL-LFB03_0.5m	NEL-LFB03_1.0m
Client sampling date / time				11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811715-001	EM1811715-002	EM1811715-003	EM1811715-004	EM1811715-005
				Result	Result	Result	Result	Result
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	----	0.1	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/L	----	<0.1	----	----	----



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-LFB03_2.0m	NEL-LFB04_0.5m	NEL-LFB05_0.5m	NEL-LFB05_1.0m	NEL-LFB06_0.1m
Client sampling date / time				11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811715-006	EM1811715-007	EM1811715-008	EM1811715-009	EM1811715-010
				Result	Result	Result	Result	Result
EG005C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	<0.1	----	----	----	----
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				NEL-LFB06_0.5m	NEL-LFB09_0.5m	----	----	----
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1811715-011	EM1811715-012	-----	-----	-----
				Result	Result	----	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB01_0.5m	NEL-LFB01_1.0m	NEL-LFB02_2.0m	NEL-LFB03_0.5m	NEL-LFB03_1.0m
Client sampling date / time				11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811715-001	EM1811715-002	EM1811715-003	EM1811715-004	EM1811715-005
				Result	Result	Result	Result	Result
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	8.6	8.3	8.7	7.5	8.5
After HCl pH	----	0.1	pH Unit	1.1	1.2	1.2	1.2	1.1
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	5.0	5.0
Final pH	----	0.1	pH Unit	5.1	5.0	5.3	5.0	5.3



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB03_2.0m	NEL-LFB04_0.5m	NEL-LFB05_0.5m	NEL-LFB05_1.0m	NEL-LFB06_0.1m
Client sampling date / time				11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811715-006	EM1811715-007	EM1811715-008	EM1811715-009	EM1811715-010
				Result	Result	Result	Result	Result
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	8.9	7.5	8.1	7.5	6.8
After HCl pH	----	0.1	pH Unit	1.2	1.2	1.2	1.3	1.2
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	5.0	5.0
Final pH	----	0.1	pH Unit	5.2	5.0	5.1	5.2	5.0



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-LFB06_0.5m	NEL-LFB09_0.5m	----	----	----
Client sampling date / time					10-Jul-2018 00:00	10-Jul-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1811715-011	EM1811715-012	-----	-----	-----
					Result	Result	----	----	----
EN60: ASLP Leaching Procedure									
Initial pH	----	0.1	pH Unit		7.6	7.7	----	----	----
After HCl pH	----	0.1	pH Unit		1.2	1.2	----	----	----
Extraction Fluid pH	----	0.1	pH Unit		5.0	5.0	----	----	----
Final pH	----	0.1	pH Unit		5.0	5.0	----	----	----

re-babel

Shirley LeCornu

tray MS2802-06

From: Kory.Auch@ghd.com
Sent: Tuesday, 24 July 2018 8:24 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1811150 | Overall Description: North East Link - Landfill Assessment
Attachments: EM1811150_COC_2.pdf

Hi Shirley,

Could we please have IWRG621 leachate testing conducted for the following?

EM1811150:

New
Lab
10
1
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12

- #2) NEL-LFB01_0.5m = lead leachate test
- #3) NEL-LFB01_1.0m = nickel leachate test
- #10) NEL-LFB02_2.0m = lead leachate test
- #15) NEL-LFB03_0.5m = lead leachate test
- #16) NEL-LFB03_1.0m = lead leachate test
- #17) NEL-LFB03_2.0m = Arsenic and lead leachate tests
- #22) NEL-LFB04_0.5m = lead leachate test
- #28) NEL-LFB05_0.5m = lead leachate test
- #29) NEL-LFB05_1.0m = lead leachate test
- #34) NEL-LFB06_0.1m = lead leachate test
- #35) NEL-LFB06_0.5m = lead leachate test
- #53) NEL-LFB09_0.5m = lead leachate test

Date
11-7
↓
10-7
↓

Environmental Division
Melbourne
Work Order Reference

EM1811715



Telephone +61-3-8549 9801

New Vays
MS : 2906-7

Let me know,
Thanks,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>

Sent: Friday, 20 July 2018 3:25 PM

To: Kory Auch <Kory.Auch@ghd.com>

Subject: RESULTS & EDD & INVOICE for ALS Workorder : EM1811150 | Overall Description: North East Link - Landfill Assessment



**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1811715**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 12-Jul-2018 10:10	Issue Date	: 24-Jul-2018
Client Requested Due Date	: 31-Jul-2018	Scheduled Reporting Date	: 31-Jul-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 12 / 12

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **This is a rebatch of EM1811150.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN60a ASLP Leachate Procedure
EM1811715-001	11-Jul-2018 00:00	NEL-LFB01_0.5m	✓	✓
EM1811715-002	11-Jul-2018 00:00	NEL-LFB01_1.0m	✓	✓
EM1811715-003	11-Jul-2018 00:00	NEL-LFB02_2.0m	✓	✓
EM1811715-004	11-Jul-2018 00:00	NEL-LFB03_0.5m	✓	✓
EM1811715-005	11-Jul-2018 00:00	NEL-LFB03_1.0m	✓	✓
EM1811715-006	11-Jul-2018 00:00	NEL-LFB03_2.0m	✓	✓
EM1811715-007	11-Jul-2018 00:00	NEL-LFB04_0.5m	✓	✓
EM1811715-008	11-Jul-2018 00:00	NEL-LFB05_0.5m	✓	✓
EM1811715-009	11-Jul-2018 00:00	NEL-LFB05_1.0m	✓	✓
EM1811715-010	10-Jul-2018 00:00	NEL-LFB06_0.1m	✓	✓
EM1811715-011	10-Jul-2018 00:00	NEL-LFB06_0.5m	✓	✓
EM1811715-012	10-Jul-2018 00:00	NEL-LFB09_0.5m	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

ACCOUNTS PAYABLE (Brisbane)

- Email ap-fss@ghd.com

Email david.quinn@ghd.com

- [illegible]

Email GHDLabreports@ghd.com

- | | |
|-------|-----------------------|
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |

Email kory.auch@ghd.com

- [illegible]

QUALITY CONTROL REPORT

Work Order	: EM1811715	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 12-Jul-2018
Order number	: ----	Date Analysis Commenced	: 26-Jul-2018
C-O-C number	: ----	Issue Date	: 27-Jul-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 12		
No. of samples analysed	: 12		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1833486)									
EM1811714-001	Anonymous	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1811715-008	NEL-LFB05_0.5m	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit			Result	LCS	Low
EG005C: Leachable Metals by ICPAES (QCLot: 1833486)								
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	108	89	119
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	97.6	88	113
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	91.8	86	111

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1833486)							
EM1811714-002	Anonymous	EG005C: Arsenic	7440-38-2	1 mg/L	103	88	124
		EG005C: Lead	7439-92-1	1 mg/L	93.4	86	118
		EG005C: Nickel	7440-02-0	1 mg/L	90.2	88	116

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1811715	Page	: 1 of 4
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 12-Jul-2018
Site	: ----	Issue Date	: 27-Jul-2018
Sampler	: ----	No. of samples received	: 12
Order number	:	No. of samples analysed	: 12

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-LFB06_0.1m, NEL-LFB06_0.5m, NEL-LFB09_0.5m	10-Jul-2018	26-Jul-2018	06-Jan-2019	✔	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-LFB01_0.5m, NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_0.5m, NEL-LFB03_1.0m, NEL-LFB03_2.0m, NEL-LFB04_0.5m, NEL-LFB05_0.5m, NEL-LFB05_1.0m	11-Jul-2018	26-Jul-2018	07-Jan-2019	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-LFB01_0.5m, NEL-LFB01_1.0m, NEL-LFB02_2.0m, NEL-LFB03_0.5m, NEL-LFB03_1.0m, NEL-LFB03_2.0m, NEL-LFB04_0.5m, NEL-LFB05_0.5m, NEL-LFB05_1.0m, NEL-LFB06_0.1m, NEL-LFB06_0.5m, NEL-LFB09_0.5m	26-Jul-2018	27-Jul-2018	22-Jan-2019	✔	27-Jul-2018	22-Jan-2019	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates

CERTIFICATE OF ANALYSIS

Work Order : **EM1811724**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **23**
No. of samples analysed : **23**

Page : 1 of 7
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 12-Jul-2018 10:10
Date Analysis Commenced : 24-Jul-2018
Issue Date : 25-Jul-2018 14:42



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1811150.



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB01_0.1m	NEL-LFB01_5.0m	NEL-LFB02_0.1m	NEL-LFB02_4.0m	NEL-LFB02_5.0m
Client sampling date / time				10-Jul-2018 00:00	11-Jul-2018 00:00	10-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811724-001	EM1811724-002	EM1811724-003	EM1811724-004	EM1811724-005
				Result	Result	Result	Result	Result
EA055: Moisture Content								
Moisture Content	----	1.0	%	17.5	15.9	20.3	15.5	18.1
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	7	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	25	25	24	37	32
Copper	7440-50-8	5	mg/kg	19	10	15	12	12
Lead	7439-92-1	5	mg/kg	47	18	30	11	12
Molybdenum	7439-98-7	2	mg/kg	<2	<2	2	<2	<2
Nickel	7440-02-0	2	mg/kg	23	24	16	19	18
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	111	51	58	44	61
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB03_0.1m	NEL-LFB03_4.0m	NEL-LFB03_5.0m	NEL-LFB04_0.1m	NEL-LFB04_5.0m
Client sampling date / time				10-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	10-Jul-2018 00:00	11-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811724-006	EM1811724-007	EM1811724-008	EM1811724-009	EM1811724-010
				Result	Result	Result	Result	Result
EA055: Moisture Content								
Moisture Content	----	1.0	%	11.7	16.1	15.8	15.6	15.8
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	24	26	31	23	28
Copper	7440-50-8	5	mg/kg	14	10	9	14	14
Lead	7439-92-1	5	mg/kg	23	15	10	25	14
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	17	17	14	13	16
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	48	26	36	60	40
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	5.7	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB05_0.1m	NEL-LFB05_4.0m	NEL-LFB05_5.0m	NEL-LFB06_4.0m	NEL-LFB06_5.0m
Client sampling date / time				10-Jul-2018 00:00	11-Jul-2018 00:00	11-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811724-011	EM1811724-012	EM1811724-013	EM1811724-014	EM1811724-015
				Result	Result	Result	Result	Result
EA055: Moisture Content								
Moisture Content	----	1.0	%	14.7	13.8	14.8	17.1	17.2
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	21	31	26	29	27
Copper	7440-50-8	5	mg/kg	13	12	11	9	9
Lead	7439-92-1	5	mg/kg	23	11	14	16	12
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	13	15	11	19	17
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	46	34	29	68	66
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB07_0.1m	NEL-LFB07_5.0m	NEL-LFB08_0.1m	NEL-LFB08_5.0m	NEL-LFB09_0.1m
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1811724-016	EM1811724-017	EM1811724-018	EM1811724-019	EM1811724-020
				Result	Result	Result	Result	Result
EA055: Moisture Content								
Moisture Content	----	1.0	%	15.5	15.9	19.5	16.4	14.2
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	<5	<5	<5	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	28	27	24	26	25
Copper	7440-50-8	5	mg/kg	54	8	17	9	30
Lead	7439-92-1	5	mg/kg	83	14	43	11	40
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	22	17	18	18	19
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	152	67	82	39	89
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB09_4.0m	NEL-LFB10_0.1m	NEL-LFB10_5.0m	----	----
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1811724-021	EM1811724-022	EM1811724-023	-----	-----
				Result	Result	Result	----	----
EA055: Moisture Content								
Moisture Content	----	1.0	%	14.0	7.6	16.0	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	24	23	30	----	----
Copper	7440-50-8	5	mg/kg	8	18	8	----	----
Lead	7439-92-1	5	mg/kg	11	30	11	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	----	----
Nickel	7440-02-0	2	mg/kg	10	25	12	----	----
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg	<5	<5	<5	----	----
Zinc	7440-66-6	5	mg/kg	22	72	34	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----

Rebatch

Client / Client code: GHD

Project: 31350060910

Project Manger: KORY AUCH

Date /time sample rec: 12/7 @ 10:10am

Date/time Instructions rec: 24/7 @ 8:26am

Due date: std

Due date surcharge:

CS Contact:

Shirley

Additional Information:

Environmental Division

Melbourne

Work Order Reference

EM1811724



Telephone : +61-3-8549 9800

MS: 2909-11

New Lab ID	Sample information						Number of Containers	Analysis										Shortest Holding time expiry
	Client ID	Sampling Date / Time	Previous Work Order Reference	Previous ALS ID	Tray Number(s)	Container		Standard					Leach					
1	NEL-LFB01_0.1m	10/07/2018 0:00	EM1811150	1	HS1394-9			X										07-Aug-18
2	NEL-LFB01_5.0m	11/07/2018 0:00	EM1811150	6	HS1394-9			X										
3	NEL-LFB02_0.1m	10/07/2018 0:00	EM1811150	7	HS1394-9			X										
4	NEL-LFB02_4.0m	11/07/2018 0:00	EM1811150	12	HS1394-9			X										
5	NEL-LFB02_5.0m	11/07/2018 0:00	EM1811150	13	HS1394-9			X										
6	NEL-LFB03_0.1m	10/04/2018 0:00	EM1811150	14	HS1394-9			X										
7	NEL-LFB03_4.0m	11/07/2018 0:00	EM1811150	19	HS1394-9			X										
8	NEL-LFB03_5.0m	11/07/2018 0:00	EM1811150	20	HS1394-9			X										
9	NEL-LFB04_0.1m	10/07/2018 0:00	EM1811150	21	HS1394-9			X										
10	NEL-LFB04_5.0m	11/07/2018 0:00	EM1811150	26	HS1394-9			X										
11	NEL-LFB05_0.1m	10/07/2018 0:00	EM1811150	27	HS1394-9			X										
12	NEL-LFB05_4.0m	11/07/2018 0:00	EM1811150	32	HS1394-9			X										
13	NEL-LFB05_5.0m	11/07/2018 0:00	EM1811150	33	HS1394-9			X										
14	NEL-LFB06_4.0m	10/07/2018 0:00	EM1811150	38	HS1394-9			X										
15	NEL-LFB06_5.0m	10/07/2018 0:00	EM1811150	39	HS1394-9			X										
16	NEL-LFB07_0.1m	10/07/2018 0:00	EM1811150	40	HS1394-9			X										
17	NEL-LFB07_5.0m	10/07/2018 0:00	EM1811150	45	HS1394-9			X										
18	NEL-LFB08_0.1m	10/07/2018 0:00	EM1811150	46	HS1394-9			X										
19	NEL-LFB08_5.0m	10/07/2018 0:00	EM1811150	51	HS1394-9			X										
20	NEL-LFB09_0.1m	10/07/2018 0:00	EM1811150	52	HS1394-9			X										
21	NEL-LFB09_4.0m	10/07/2018 0:00	EM1811150	57	HS1394-9			X										
22	NEL-LFB10_0.1m	10/07/2018 0:00	EM1811150	58	HS1394-9			X										
23	NEL-LFB10_5.0m	10/07/2018 0:00	EM1811150	63	HS1394-9			X										
TOTAL							0											

AD 24/7

Shirley LeCornu

Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1811150 | Overall Description: North East Link - Landfill Assessment

From: Kory.Auch@ghd.com [mailto:Kory.Auch@ghd.com]

Sent: Tuesday, 24 July 2018 8:26 AM

To: Shirley LeCornu <shirley.lecornu@alsglobal.com>

Cc: David Quinn <David.Quinn@ghd.com>

Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1811150 | Overall Description: North East Link - Landfill Assessment

Hi Shirley, I forgot one more request.

Could we also have the remaining samples that were sent in on hold be analysed for IWRG621 metals?

Let me know on this request as well.

Thank you!

Kory Auch

GHD

T: 03 8687 8948 | **V:** 318948 | **M:** 0478 797 000 | **E:** kory.auch@ghd.com

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1811724**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	: ----	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 12-Jul-2018 10:10	Issue Date	: 24-Jul-2018
Client Requested Due Date	: 31-Jul-2018	Scheduled Reporting Date	: 31-Jul-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 23 / 23

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1811150.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - P-16/1 + Total Cr IWRG 621 METALS (including Total Chromium)
EM1811724-001	10-Jul-2018 00:00	NEL-LFB01_0.1m	✓	✓
EM1811724-002	11-Jul-2018 00:00	NEL-LFB01_5.0m	✓	✓
EM1811724-003	10-Jul-2018 00:00	NEL-LFB02_0.1m	✓	✓
EM1811724-004	11-Jul-2018 00:00	NEL-LFB02_4.0m	✓	✓
EM1811724-005	11-Jul-2018 00:00	NEL-LFB02_5.0m	✓	✓
EM1811724-006	10-Jul-2018 00:00	NEL-LFB03_0.1m	✓	✓
EM1811724-007	11-Jul-2018 00:00	NEL-LFB03_4.0m	✓	✓
EM1811724-008	11-Jul-2018 00:00	NEL-LFB03_5.0m	✓	✓
EM1811724-009	10-Jul-2018 00:00	NEL-LFB04_0.1m	✓	✓
EM1811724-010	11-Jul-2018 00:00	NEL-LFB04_5.0m	✓	✓
EM1811724-011	10-Jul-2018 00:00	NEL-LFB05_0.1m	✓	✓
EM1811724-012	11-Jul-2018 00:00	NEL-LFB05_4.0m	✓	✓
EM1811724-013	11-Jul-2018 00:00	NEL-LFB05_5.0m	✓	✓
EM1811724-014	10-Jul-2018 00:00	NEL-LFB06_4.0m	✓	✓
EM1811724-015	10-Jul-2018 00:00	NEL-LFB06_5.0m	✓	✓
EM1811724-016	10-Jul-2018 00:00	NEL-LFB07_0.1m	✓	✓
EM1811724-017	10-Jul-2018 00:00	NEL-LFB07_5.0m	✓	✓
EM1811724-018	10-Jul-2018 00:00	NEL-LFB08_0.1m	✓	✓
EM1811724-019	10-Jul-2018 00:00	NEL-LFB08_5.0m	✓	✓
EM1811724-020	10-Jul-2018 00:00	NEL-LFB09_0.1m	✓	✓
EM1811724-021	10-Jul-2018 00:00	NEL-LFB09_4.0m	✓	✓
EM1811724-022	10-Jul-2018 00:00	NEL-LFB10_0.1m	✓	✓
EM1811724-023	10-Jul-2018 00:00	NEL-LFB10_5.0m	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

ALL ACCOUNTS

Email ap-fss@ghd.com

Email david.quinn@ghd.com

- [illegible]

Email GHDLabreports@ghd.com

- | | |
|-------|-----------------------|
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |
| Email | GHDLabreports@ghd.com |

Email kory.auch@ghd.com

- [illegible]

QUALITY CONTROL REPORT

Work Order	: EM1811724	Page	: 1 of 5
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 12-Jul-2018
Order number	: ----	Date Analysis Commenced	: 24-Jul-2018
C-O-C number	: ----	Issue Date	: 25-Jul-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 23		
No. of samples analysed	: 23		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1824303)									
EM1811657-002	Anonymous	EA055: Moisture Content	----	0.1	%	25.6	24.8	3.29	0% - 20%
EM1811724-002	NEL-LFB01_5.0m	EA055: Moisture Content	----	0.1	%	15.9	16.2	1.86	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1824304)									
EM1811724-012	NEL-LFB05_4.0m	EA055: Moisture Content	----	0.1	%	13.8	14.0	1.01	0% - 50%
EM1811724-022	NEL-LFB10_0.1m	EA055: Moisture Content	----	0.1	%	7.6	7.6	0.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1824288)									
EM1811657-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	36	33	7.83	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	15	8.88	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	5	20.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	10	10.9	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	11	10	0.00	No Limit
EM1811724-007	NEL-LFB03_4.0m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	26	28	7.67	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	17	15	10.2	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	13	25.1	No Limit

Page : 3 of 5
 Work Order : EM1811724
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1824288) - continued									
EM1811724-007	NEL-LFB03_4.0m	EG005T: Lead	7439-92-1	5	mg/kg	15	16	11.4	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	26	32	23.0	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1824290)									
EM1811724-018	NEL-LFB08_0.1m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	24	24	0.00	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	18	17	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	17	17	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	43	43	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	82	81	1.66	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1824289)									
EM1811657-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1811724-007	NEL-LFB03_4.0m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1824291)									
EM1811724-018	NEL-LFB08_0.1m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1824288)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	102	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	96.4	85	109
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	92.0	83	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	96.5	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	97.5	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	95.2	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	97.1	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	102	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	84.1	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	97.8	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	101	82	111
EG005T: Total Metals by ICP-AES (QCLot: 1824290)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	97.4	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	93.4	85	109
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	95.0	83	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	98.4	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	96.1	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	95.5	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	99.2	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	102	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	84.9	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	96.2	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	97.4	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1824289)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.0	77	104
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1824291)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	87.9	77	104

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report		
Spike	Spike Recovery(%)	Recovery Limits (%)



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1824288)							
EM1811706-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	92.5	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.3	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	95.9	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	107	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	111	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	94.8	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	102	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	76.0	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	105	74	128
EG005T: Total Metals by ICP-AES (QCLot: 1824290)							
EM1811724-019	NEL-LFB08_5.0m	EG005T: Arsenic	7440-38-2	50 mg/kg	104	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	102	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	104	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	110	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	105	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	89.5	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	105	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	94.5	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	108	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1824289)							
EM1811706-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	98.2	76	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1824291)							
EM1811724-019	NEL-LFB08_5.0m	EG035T: Mercury	7439-97-6	5 mg/kg	90.1	76	116

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1811724**

Page : 1 of 5

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **KORY AUCH**

Telephone : +61-3-8549 9630

Project : 31350060910

Date Samples Received : 12-Jul-2018

Site : ----

Issue Date : 25-Jul-2018

Sampler : ----

No. of samples received : 23

Order number : ----

No. of samples analysed : 23

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055) NEL-LFB01_0.1m, NEL-LFB02_0.1m, NEL-LFB03_0.1m, NEL-LFB04_0.1m, NEL-LFB05_0.1m, NEL-LFB06_4.0m, NEL-LFB07_0.1m, NEL-LFB08_0.1m, NEL-LFB09_0.1m, NEL-LFB10_0.1m		10-Jul-2018	----	----	----	24-Jul-2018	24-Jul-2018	✓
Soil Glass Jar - Unpreserved (EA055) NEL-LFB01_5.0m, NEL-LFB02_5.0m, NEL-LFB03_5.0m, NEL-LFB04_5.0m, NEL-LFB05_4.0m, NEL-LFB02_4.0m, NEL-LFB03_4.0m, NEL-LFB04_5.0m, NEL-LFB05_5.0m		11-Jul-2018	----	----	----	24-Jul-2018	25-Jul-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-LFB01_0.1m, NEL-LFB02_0.1m, NEL-LFB03_0.1m, NEL-LFB04_0.1m, NEL-LFB05_0.1m, NEL-LFB06_4.0m, NEL-LFB07_0.1m, NEL-LFB08_0.1m, NEL-LFB09_0.1m, NEL-LFB10_0.1m		10-Jul-2018	24-Jul-2018	06-Jan-2019	✓	24-Jul-2018	06-Jan-2019	✓
Soil Glass Jar - Unpreserved (EG005T) NEL-LFB01_5.0m, NEL-LFB02_5.0m, NEL-LFB03_5.0m, NEL-LFB04_5.0m, NEL-LFB05_4.0m, NEL-LFB02_4.0m, NEL-LFB03_4.0m, NEL-LFB04_5.0m, NEL-LFB05_5.0m		11-Jul-2018	24-Jul-2018	07-Jan-2019	✓	24-Jul-2018	07-Jan-2019	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)		10-Jul-2018	24-Jul-2018	07-Aug-2018	✓	25-Jul-2018	07-Aug-2018	✓
NEL-LFB01_0.1m,	NEL-LFB02_0.1m,							
NEL-LFB03_0.1m,	NEL-LFB04_0.1m,							
NEL-LFB05_0.1m,	NEL-LFB06_4.0m,							
NEL-LFB06_5.0m,	NEL-LFB07_0.1m,							
NEL-LFB07_5.0m,	NEL-LFB08_0.1m,							
NEL-LFB08_5.0m,	NEL-LFB09_0.1m,							
NEL-LFB09_4.0m,	NEL-LFB10_0.1m,							
NEL-LFB10_5.0m								
Soil Glass Jar - Unpreserved (EG035T)		11-Jul-2018	24-Jul-2018	08-Aug-2018	✓	25-Jul-2018	08-Aug-2018	✓
NEL-LFB01_5.0m,	NEL-LFB02_4.0m,							
NEL-LFB02_5.0m,	NEL-LFB03_4.0m,							
NEL-LFB03_5.0m,	NEL-LFB04_5.0m,							
NEL-LFB05_4.0m,	NEL-LFB05_5.0m							



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	4	32	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	26	11.54	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	27	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	2	26	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)

CERTIFICATE OF ANALYSIS

Work Order : **EM1812499**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **28**
No. of samples analysed : **23**

Page : 1 of 13
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 14-May-2018 16:30
Date Analysis Commenced : 07-Aug-2018
Issue Date : 09-Aug-2018 13:42



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- This is a rebatch of EM1809010, EM1809091, EM1809654, EM1809655, EM1809671, EM1810871, EM1810873, EM1811072, EM1811453 and EM1811724.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-ENV-BH009_1.5-1.6m	NEL-EF-BH005_1.0m	NEL-BH225_0.2m	NEL-BH120_0.2m	NEL-BH120_1.0m
Client sampling date / time				01-Jun-2018 00:00	01-Jun-2018 00:00	06-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1812499-003	EM1812499-005	EM1812499-007	EM1812499-008	EM1812499-009
				Result	Result	Result	Result	Result
EG005C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	----	----	<0.1	----	----
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	----	<0.1	----
Nickel	7440-02-0	0.1	mg/L	----	----	<0.1	----	<0.1



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-BH174_1.5m	NEL-BH178_0.2m	NEL-BH079_1.0m	NEL-BH184_0.2m	NEL-BH195_0.5m
Client sampling date / time				05-Jul-2018 00:00	05-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1812499-010	EM1812499-011	EM1812499-012	EM1812499-013	EM1812499-014
				Result	Result	Result	Result	Result
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	----	----	----	<0.1
Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	----



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-BH195_1.0m	NEL-BH192_0.2m	NEL-BH192_1.0m	NEL-LFB01_0.1m	NEL-LFB02_0.1m
Client sampling date / time				10-Jul-2018 00:00	18-Jul-2018 00:00	18-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1812499-015	EM1812499-016	EM1812499-017	EM1812499-018	EM1812499-019
				Result	Result	Result	Result	Result
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	----	<0.1	<0.1
Nickel	7440-02-0	0.1	mg/L	----	<0.1	<0.1	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	32.9	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	72.7	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	87.7	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	82.8	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%	87.0	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	87.0	----	----	----	----



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-LFB03_0.1m	NEL-LFB03_5.0m	NEL-LFB04_0.1m	NEL-LFB05_0.1m	NEL-LFB07_0.1m
Client sampling date / time				10-Jul-2018 00:00	11-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1812499-020	EM1812499-021	EM1812499-022	EM1812499-023	EM1812499-024
				Result	Result	Result	Result	Result
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	----	<0.1	<0.1	<0.1
EG035C: Leachable Mercury by FIMS								
Mercury	7439-97-6	0.0010	mg/L	----	<0.0010	----	----	----



Analytical Results

Sub-Matrix: **ASLP LEACHATE**
 (Matrix: **WATER**)

Client sample ID

				NEL-LFB08_0.1m	NEL-LFB09_0.1m	NEL-LFB10_0.1m	----	----
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1812499-025	EM1812499-026	EM1812499-027	-----	-----
				Result	Result	Result	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH009_1.5-1.6m	NEL-EF-BH005_1.0m	NEL-BH225_0.2m	NEL-BH120_0.2m	NEL-BH120_1.0m
Client sampling date / time				01-Jun-2018 00:00	01-Jun-2018 00:00	06-Jul-2018 00:00	05-Jul-2018 00:00	05-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1812499-003	EM1812499-005	EM1812499-007	EM1812499-008	EM1812499-009
				Result	Result	Result	Result	Result
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	7.5	7.7	9.0	7.6	9.4
After HCl pH	----	0.1	pH Unit	1.3	1.3	1.3	1.2	1.3
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	5.0	5.0
Final pH	----	0.1	pH Unit	5.0	5.0	5.0	5.1	5.0



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH174_1.5m	NEL-BH178_0.2m	NEL-BH079_1.0m	NEL-BH184_0.2m	NEL-BH195_0.5m
Client sampling date / time				05-Jul-2018 00:00	05-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1812499-010	EM1812499-011	EM1812499-012	EM1812499-013	EM1812499-014
				Result	Result	Result	Result	Result
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	8.7	9.6	7.1	8.3	7.9
After HCl pH	----	0.1	pH Unit	1.3	1.4	1.2	1.2	1.2
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	5.0	5.0
Final pH	----	0.1	pH Unit	5.0	5.3	5.0	5.0	5.0



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH195_1.0m	NEL-BH192_0.2m	NEL-BH192_1.0m	NEL-LFB01_0.1m	NEL-LFB02_0.1m
Client sampling date / time				10-Jul-2018 00:00	18-Jul-2018 00:00	18-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1812499-015	EM1812499-016	EM1812499-017	EM1812499-018	EM1812499-019
				Result	Result	Result	Result	Result
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	8.7	7.2	9.1	6.5	6.7
After HCl pH	----	0.1	pH Unit	1.3	1.3	1.3	1.3	1.3
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	5.0	5.0
Final pH	----	0.1	pH Unit	5.0	5.0	5.0	5.0	5.0



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB03_0.1m	NEL-LFB03_5.0m	NEL-LFB04_0.1m	NEL-LFB05_0.1m	NEL-LFB07_0.1m
Client sampling date / time				10-Jul-2018 00:00	11-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00
Compound	CAS Number	LOR	Unit	EM1812499-020	EM1812499-021	EM1812499-022	EM1812499-023	EM1812499-024
				Result	Result	Result	Result	Result
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	7.0	8.7	6.2	6.2	6.7
After HCl pH	----	0.1	pH Unit	1.3	1.3	1.3	1.3	1.3
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	5.0	5.0
Final pH	----	0.1	pH Unit	5.0	5.0	5.0	5.0	5.0



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-LFB08_0.1m	NEL-LFB09_0.1m	NEL-LFB10_0.1m	----	----
Client sampling date / time				10-Jul-2018 00:00	10-Jul-2018 00:00	10-Jul-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1812499-025	EM1812499-026	EM1812499-027	-----	-----
				Result	Result	Result	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	7.1	7.7	7.7	----	----
After HCl pH	----	0.1	pH Unit	1.3	1.4	1.4	----	----
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	----	----
Final pH	----	0.1	pH Unit	5.0	5.1	5.1	----	----



Surrogate Control Limits

Sub-Matrix: ASLP LEACHATE

		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127

re-batch

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 6 August 2018 1:13 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1811072 | Overall Description: North East Link - Contamination
Attachments: EM1811072_COC.pdf; EM1809091_COC_1.pdf; EM1810873_COC_1.pdf; EM1810871_COC_1.pdf; EM1808781_COC_2.pdf; EM1808553_COC_1.pdf; EM1808252_COC.pdf; EM1809010_COC.pdf

Hi Shirley, more leachate test requests below. As requested previously, could you please put all the requests I sent today on one rebatch report?

EM1808252: 1939-40 X

- #1) NEL-BH191_0.5m = **nickel** leachate test
- #2) NEL-BH191_1.0m = **nickel** leachate test

Disposed.

9655-1

2384. Already analysed under 9655?

EM1808553: 2061 X

- #1) NEL-BH156_0.1m = **lead** leachate test
- #2) NEL-BH156_0.5m = **nickel** leachate test
- #4) NEL-BH194_0.2m = **lead** leachate test
- #6) NEL-BH194_1.0m = **nickel** leachate test

Disposed

EM1808781: 2120 9654

2384.

- #1) NEL-EF-BH007_0.2m = **lead** leachate test
- #2) NEL-EF-BH007_0.5m = **lead and nickel** leachate tests

Already analysed under 9654?

EM1809010: 2144-5 ✓

- #3) NEL-ENV-BH009_1.5-1.6 = **lead** leachate test

EM1809091: 2208-9 9671 2388

- #1) 2 NEL-EF-BH005_0.2m = **lead** leachate test
- #3) NEL-EF-BH005_1.0m = **lead** leachate test
- #7) 1 NEL-BH185_0.9m = **nickel** leachate test

Already analysed under 9671?

EM1810871: 2723 ✓

- #4) NEL-BH225_0.2m = **Arsenic and nickel** leachate tests

EM1810873: 2723-4 ✓

- #1) NEL-BH120_0.2m = **lead** leachate test
- #3) NEL-BH120_1.0m = **nickel** leachate test
- #8) NEL-BH174_1.5m = **lead and nickel** leachate test
- #9) NEL-BH178_0.2m = **nickel** leachate test

EM1811072: 2818-9 ✓

- #3) NEL-BH079_1.0m = **nickel** leachate test
- #4) NEL-BH184_0.2m = **nickel** leachate test
- #6) NEL-BH195_0.5m = **lead** leachate test
- #7) NEL-BH195_1.0m = **lead and benzo(a)pyrene** leachate tests

Thanks,

Environmental Division
Melbourne
Work Order Reference

EM1812499



Telephone : +61-3-6549 3600

MS: 3101-3

SN 6/8.

Kory Auch

GHD

T: 03 8687 8948 | **V:** 318948 | **M:** 0478 797 000 | **E:** kory.auch@ghd.com

From: David Quinn

Sent: Thursday, 19 July 2018 12:57 PM

To: Kory Auch <Kory.Auch@ghd.com>

Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1811072 | Overall Description: North East Link - Contamination

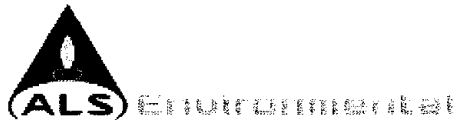
FYI

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>

Sent: Thursday, 19 July 2018 12:28 PM

To: David Quinn <David.Quinn@ghd.com>

Subject: RESULTS & EDD & INVOICE for ALS Workorder : EM1811072 | Overall Description: North East Link - Contamination



Deliverables for ALS Workorder EM1811072

Project: 31350060910

Overall Description: North East Link - Contamination

Dear DAVID QUINN,

Please find enclosed the following deliverables for **EM1811072**:

- 31350060910.ESDAT_EM1811072_0.Chemistry2e.CSV
- 31350060910.ESDAT_EM1811072_0.Header.XML
- 31350060910.ESDAT_EM1811072_0.Sample2e.CSV
- EM1811072_0_COA.pdf
- EM1811072_0_ENMRG.CSV
- EM1811072_0_QC.pdf
- EM1811072_0_QCI.pdf
- L704162_INV.pdf
- EM1811072_0_COA_GL_EPA_WASTE.pdf
- EM1811072_COC.pdf

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 6 August 2018 11:23 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: RESULTS & EDD & INVOICE for ALS Workorder : EM1811453 | Overall Description: North East Link - Contamination
Attachments: EM1811453_COC.pdf

Hi Shirley,

Could we please have IWRG621 leachate testing conducted for the following?

New EM1811453:

- 16 ¹⁰ #1) NEL-BH192_0.2m = lead and nickel leachate tests
17 ¹¹ #3 NEL-BH192_1.0m = nickel leachate test

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

From: David Quinn
Sent: Friday, 27 July 2018 1:31 PM
To: Kory Auch <Kory.Auch@ghd.com>
Subject: FW: RESULTS & EDD & INVOICE for ALS Workorder : EM1811453 | Overall Description: North East Link - Contamination

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Tuesday, 24 July 2018 9:50 AM
To: David Quinn <David.Quinn@ghd.com>
Subject: RESULTS & EDD & INVOICE for ALS Workorder : EM1811453 | Overall Description: North East Link - Contamination



Deliverables for ALS Workorder EM1811453

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 6 August 2018 11:21 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: CoC for ALS Workorder : EM1811150 | Overall Description: North East Link - Landfill Assessment
Attachments: EM1811150_COC_2.pdf

Hi Shirley,

Could we please have IWRG621 leachate testing conducted for the following?

New
10 **EM1811150:** 11724 . 2909-11.

- 18 #1) NEL-LFB01_0.1m = **lead** leachate test
- 19 #7) 3 NEL-LFB02_0.1m = **lead** leachate test
- 20 #14) 6 NEL-LFB03_0.1m = **lead** leachate test
- 21 #20) 8 NEL-LFB03_5.0m = **mercury** leachate test
- 22 #21) 9 NEL-LFB04_0.1m = **lead** leachate test
- 23 #27) 11 NEL-LFB05_0.1m = **lead** leachate test
- 24 #40) 16 NEL-LFB07_0.1m = **lead** leachate test
- 25 #46) 18 NEL-LFB08_0.1m = **lead** leachate test
- 26 #52) 20 NEL-LFB09_0.1m = **lead** leachate test
- 27 #58) 22 NEL-LFB10_0.1m = **lead** leachate test

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>

Sent: Monday, 16 July 2018 8:17 AM

To: Kory Auch <Kory.Auch@ghd.com>

Subject: CoC for ALS Workorder : EM1811150 | Overall Description: North East Link - Landfill Assessment



Deliverables for ALS Workorder EM1811150

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1812499**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 14-May-2018 16:30	Issue Date	: 06-Aug-2018
Client Requested Due Date	: 13-Aug-2018	Scheduled Reporting Date	: 13-Aug-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 28 / 23

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1809010, EM1809091, EM1809654, EM1809655, EM1809671, EM1810871, EM1810873, EM1811072, EM1811453 and EM1811724.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

EM1812499-003 : [01-Jun-2018] : NEL-ENV-BH009_1.5-1.6m

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EG035C Leachable Mercury	SOIL - EN60a ASLP Leachate Procedure	SOIL - EP075 SIM PAH only SIM - PAH only
EM1812499-001	28-May-2018 00:00	NEL-EF-BH007_0.2m	✓				
EM1812499-002	28-May-2018 00:00	NEL-EF-BH007_0.5m	✓				
EM1812499-003	01-Jun-2018 00:00	NEL-ENV-BH009_1.5-1....		✓		✓	
EM1812499-004	01-Jun-2018 00:00	NEL-EF-BH005_0.2m	✓				
EM1812499-005	01-Jun-2018 00:00	NEL-EF-BH005_1.0m		✓		✓	
EM1812499-006	01-Jun-2018 00:00	NEL-BH185_0.9m	✓				
EM1812499-007	06-Jul-2018 00:00	NEL-BH225_0.2m		✓		✓	
EM1812499-008	05-Jul-2018 00:00	NEL-BH120_0.2m		✓		✓	
EM1812499-009	05-Jul-2018 00:00	NEL-BH120_1.0m		✓		✓	
EM1812499-010	05-Jul-2018 00:00	NEL-BH174_1.5m		✓		✓	
EM1812499-011	05-Jul-2018 00:00	NEL-BH178_0.2m		✓		✓	
EM1812499-012	10-Jul-2018 00:00	NEL-BH079_1.0m		✓		✓	
EM1812499-013	10-Jul-2018 00:00	NEL-BH184_0.2m		✓		✓	
EM1812499-014	10-Jul-2018 00:00	NEL-BH195_0.5m		✓		✓	
EM1812499-015	10-Jul-2018 00:00	NEL-BH195_1.0m		✓		✓	✓
EM1812499-016	18-Jul-2018 00:00	NEL-BH192_0.2m		✓		✓	
EM1812499-017	18-Jul-2018 00:00	NEL-BH192_1.0m		✓		✓	
EM1812499-018	10-Jul-2018 00:00	NEL-LFB01_0.1m		✓		✓	
EM1812499-019	10-Jul-2018 00:00	NEL-LFB02_0.1m		✓		✓	
EM1812499-020	10-Jul-2018 00:00	NEL-LFB03_0.1m		✓		✓	
EM1812499-021	11-Jul-2018 00:00	NEL-LFB03_5.0m			✓	✓	
EM1812499-022	10-Jul-2018 00:00	NEL-LFB04_0.1m		✓		✓	
EM1812499-023	10-Jul-2018 00:00	NEL-LFB05_0.1m		✓		✓	
EM1812499-024	10-Jul-2018 00:00	NEL-LFB07_0.1m		✓		✓	
EM1812499-025	10-Jul-2018 00:00	NEL-LFB08_0.1m		✓		✓	
EM1812499-026	10-Jul-2018 00:00	NEL-LFB09_0.1m		✓		✓	
EM1812499-027	10-Jul-2018 00:00	NEL-LFB10_0.1m		✓		✓	
EM1812499-028	12-May-2018 00:00	NEL-BH191_1.0m	✓				

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✓ = Within holding time.



Method	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EN60a: ASLP for Non & Semivolatile Analytes							
NEL-BH195_1.0m	Non-Volatile Leach: 14 day HT(ε	24-Jul-2018	----	14-May-2018	✓	06-Aug-2018	✗

Requested Deliverables

ALL ACCOUNTS

- A4 - AU Tax Invoice (INV)

Email ap-fss@ghd.com

DAVID QUINN

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESDat (ESRN ESDAT)

[illegible]

GHD LAB REPORTS

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESDat (ESRN ESDAT)

[illegible]

KORY AUCH

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESDat (ESRN ESDAT)

[illegible]

QUALITY CONTROL REPORT

Work Order	: EM1812499	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 14-May-2018
Order number	: ----	Date Analysis Commenced	: 07-Aug-2018
C-O-C number	: ----	Issue Date	: 09-Aug-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 28		
No. of samples analysed	: 23		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1858634)									
EM1812499-003	NEL-ENV-BH009_1.5-1.6m	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1812499-014	NEL-BH195_0.5m	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EG005C: Leachable Metals by ICPAES (QC Lot: 1858635)									
EM1812499-026	NEL-LFB09_0.1m	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EG035C: Leachable Mercury by FIMS (QC Lot: 1862126)									
EM1812337-001	Anonymous	EG035C: Mercury	7439-97-6	0.0001	mg/L	<0.0010	<0.0010	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1858634)								
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	100	89	119
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	99.1	88	113
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	94.8	86	111
EG005C: Leachable Metals by ICPAES (QCLot: 1858635)								
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	97.1	89	119
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	96.5	88	113
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	94.7	86	111
EG035C: Leachable Mercury by FIMS (QCLot: 1862126)								
EG035C: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	89.2	84	116
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1858728)								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	91.1	56	126

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1858634)							
EM1812499-005	NEL-EF-BH005_1.0m	EG005C: Arsenic	7440-38-2	1 mg/L	106	88	124
		EG005C: Lead	7439-92-1	1 mg/L	98.3	86	118
		EG005C: Nickel	7440-02-0	1 mg/L	95.8	88	116
EG005C: Leachable Metals by ICPAES (QCLot: 1858635)							
EM1812499-027	NEL-LFB10_0.1m	EG005C: Arsenic	7440-38-2	1 mg/L	104	88	124
		EG005C: Lead	7439-92-1	1 mg/L	96.2	86	118
		EG005C: Nickel	7440-02-0	1 mg/L	92.6	88	116
EG035C: Leachable Mercury by FIMS (QCLot: 1862126)							
EM1812337-002	Anonymous	EG035C: Mercury	7439-97-6	0.01 mg/L	108	84	118

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1812499**

Page : 1 of 5

Client : **GHD PTY LTD**

Laboratory : Environmental Division Melbourne

Contact : **KORY AUCH**

Telephone : +61-3-8549 9630

Project : 31350060910

Date Samples Received : 14-May-2018

Site : ----

Issue Date : 09-Aug-2018

Sampler : ----

No. of samples received : 28

Order number :

No. of samples analysed : 23

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EN60: ASLP Leaching Procedure						
Non-Volatile Leach: 14 day HT(e.g. SV organics) NEL-BH195_1.0m	07-Aug-2018	24-Jul-2018	14	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Container / Client Sample ID(s)							
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN60a) NEL-BH195_1.0m	10-Jul-2018	07-Aug-2018	24-Jul-2018	✖	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-ENV-BH009_1.5-1.6m, NEL-EF-BH005_1.0m	01-Jun-2018	07-Aug-2018	28-Nov-2018	✔	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH120_0.2m, NEL-BH120_1.0m, NEL-BH174_1.5m, NEL-BH178_0.2m	05-Jul-2018	07-Aug-2018	01-Jan-2019	✔	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH225_0.2m	06-Jul-2018	07-Aug-2018	02-Jan-2019	✔	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a)							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EN60: ASLP Leaching Procedure - Continued								
NEL-BH079_1.0m, NEL-BH195_0.5m, NEL-LFB02_0.1m, NEL-LFB04_0.1m, NEL-LFB07_0.1m, NEL-LFB09_0.1m,	NEL-BH184_0.2m, NEL-LFB01_0.1m, NEL-LFB03_0.1m, NEL-LFB05_0.1m, NEL-LFB08_0.1m, NEL-LFB10_0.1m	10-Jul-2018	07-Aug-2018	06-Jan-2019	✔	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH192_0.2m,	NEL-BH192_1.0m	18-Jul-2018	07-Aug-2018	14-Jan-2019	✔	----	----	----
Non-Volatile Leach: 28 day HT(e.g. Hg, CrVI) (EN60a) NEL-LFB03_5.0m		11-Jul-2018	07-Aug-2018	08-Aug-2018	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-ENV-BH009_1.5-1.6m, NEL-BH225_0.2m, NEL-BH120_1.0m, NEL-BH178_0.2m, NEL-BH184_0.2m, NEL-BH195_1.0m, NEL-BH192_1.0m, NEL-LFB02_0.1m, NEL-LFB04_0.1m, NEL-LFB07_0.1m, NEL-LFB09_0.1m, NEL-EF-BH005_1.0m, NEL-BH120_0.2m, NEL-BH174_1.5m, NEL-BH079_1.0m, NEL-BH195_0.5m, NEL-BH192_0.2m, NEL-LFB01_0.1m, NEL-LFB03_0.1m, NEL-LFB05_0.1m, NEL-LFB08_0.1m, NEL-LFB10_0.1m	07-Aug-2018	08-Aug-2018	03-Feb-2019	✔	08-Aug-2018	03-Feb-2019	✔
EG035C: Leachable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035C) NEL-LFB03_5.0m	07-Aug-2018	----	----	----	09-Aug-2018	04-Sep-2018	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) NEL-BH195_1.0m	07-Aug-2018	08-Aug-2018	14-Aug-2018	✔	08-Aug-2018	17-Sep-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Leachable Mercury by FIMS	EG035C	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	3	22	13.64	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	1	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Mercury by FIMS	EG035C	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Mercury by FIMS	EG035C	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Mercury by FIMS	EG035C	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Leachable Metals by ICPAES	EG005C	2	22	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
Leachable Mercury by FIMS	EG035C	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the TCLP solution. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
Separatory Funnel Extraction of Liquids	ORG14	SOIL	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.

CERTIFICATE OF ANALYSIS

Work Order : **EM1812809**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **KH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **11**
No. of samples analysed : **7**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 10-Aug-2018 17:30
Date Analysis Commenced : 13-Aug-2018
Issue Date : 16-Aug-2018 15:38



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EK026SF: EM1812809 #9 and 10 Total Cyanide has been confirmed by reanalysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH184_0.5	NEL-BH184_1.0	NEL-BH217_0.5	NEL-BH217_1.0	----
Client sampling date / time					09-Aug-2018 10:00	09-Aug-2018 10:00	09-Aug-2018 13:00	09-Aug-2018 13:00	----
Compound	CAS Number	LOR	Unit		EM1812809-002	EM1812809-003	EM1812809-006	EM1812809-007	-----
				Result	Result	Result	Result	Result	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.0	5.9	5.3	5.7	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		12.2	17.9	26.5	24.5	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		5	<5	6	5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg		15	20	20	26	----
Lead	7439-92-1	5	mg/kg		14	13	13	12	----
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg		28	45	26	26	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg		34	46	41	66	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		390	530	520	410	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH184_0.5	NEL-BH184_1.0	NEL-BH217_0.5	NEL-BH217_1.0	----
Client sampling date / time					09-Aug-2018 10:00	09-Aug-2018 10:00	09-Aug-2018 13:00	09-Aug-2018 13:00	----
Compound	CAS Number	LOR	Unit		EM1812809-002	EM1812809-003	EM1812809-006	EM1812809-007	-----
					Result	Result	Result	Result	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH184_0.5	NEL-BH184_1.0	NEL-BH217_0.5	NEL-BH217_1.0	----
Client sampling date / time				09-Aug-2018 10:00	09-Aug-2018 10:00	09-Aug-2018 13:00	09-Aug-2018 13:00	----	
Compound	CAS Number	LOR	Unit	EM1812809-002	EM1812809-003	EM1812809-006	EM1812809-007	-----	
				Result	Result	Result	Result	----	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	----	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	----	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	----	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	----	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	----	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	----	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	----	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	----	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	----	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	----	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	0.6	<0.5	<0.5	<0.5	----	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	0.6	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH184_0.5	NEL-BH184_1.0	NEL-BH217_0.5	NEL-BH217_1.0	----
Client sampling date / time					09-Aug-2018 10:00	09-Aug-2018 10:00	09-Aug-2018 13:00	09-Aug-2018 13:00	----
Compound	CAS Number	LOR	Unit		EM1812809-002	EM1812809-003	EM1812809-006	EM1812809-007	-----
					Result	Result	Result	Result	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH184_0.5	NEL-BH184_1.0	NEL-BH217_0.5	NEL-BH217_1.0	----
Client sampling date / time					09-Aug-2018 10:00	09-Aug-2018 10:00	09-Aug-2018 13:00	09-Aug-2018 13:00	----
Compound	CAS Number	LOR	Unit		EM1812809-002	EM1812809-003	EM1812809-006	EM1812809-007	-----
					Result	Result	Result	Result	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		95.4	112	111	83.3	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		87.7	85.3	79.0	83.2	----
Toluene-D8	2037-26-5	0.1	%		84.0	83.2	78.6	81.0	----
4-Bromofluorobenzene	460-00-4	0.1	%		91.0	90.7	87.1	88.1	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		88.6	114	108	89.4	----
2-Chlorophenol-D4	93951-73-6	0.025	%		70.6	90.0	86.8	70.8	----
2,4,6-Tribromophenol	118-79-6	0.025	%		86.0	104	95.0	68.2	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		81.4	103	99.8	81.9	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		77.7	98.2	93.8	78.3	----
2-Fluorobiphenyl	321-60-8	0.025	%		85.7	107	104	87.6	----
Anthracene-d10	1719-06-8	0.025	%		91.4	111	107	91.3	----
4-Terphenyl-d14	1718-51-0	0.025	%		99.1	119	116	98.5	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB135	RS135	TB135	----	----
Client sampling date / time				09-Aug-2018 14:30	09-Aug-2018 14:30	09-Aug-2018 14:30	----	----
Compound	CAS Number	LOR	Unit	EM1812809-009	EM1812809-010	EM1812809-011	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.71	6.89	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				FB135	RS135	TB135	----	----
Client sampling date / time				09-Aug-2018 14:30	09-Aug-2018 14:30	09-Aug-2018 14:30	----	----
Compound	CAS Number	LOR	Unit	EM1812809-009	EM1812809-010	EM1812809-011	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				FB135	RS135	TB135	----	----
Client sampling date / time				09-Aug-2018 14:30	09-Aug-2018 14:30	09-Aug-2018 14:30	----	----
Compound	CAS Number	LOR	Unit	EM1812809-009	EM1812809-010	EM1812809-011	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB135	RS135	TB135	----	----
Client sampling date / time					09-Aug-2018 14:30	09-Aug-2018 14:30	09-Aug-2018 14:30	----	----
Compound	CAS Number	LOR	Unit		EM1812809-009	EM1812809-010	EM1812809-011	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		93.4	93.8	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		78.7	86.0	----	----	----
Toluene-D8	2037-26-5	5	%		78.9	87.8	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		92.3	98.3	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		32.1	33.0	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		77.2	81.0	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		69.6	72.3	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		87.2	86.4	----	----	----
Anthracene-d10	1719-06-8	1.0	%		88.6	89.9	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		90.9	92.3	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	FB135	RS135	TB135	----	----
Client sampling date / time					09-Aug-2018 14:30	09-Aug-2018 14:30	09-Aug-2018 14:30	----	----
Compound	CAS Number	LOR	Unit		EM1812809-009	EM1812809-010	EM1812809-011	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		27.4	28.6	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		64.3	66.0	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		70.6	69.4	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		72.8	71.9	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		73.9	72.1	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		79.4	75.9	----	----	----
Anthracene-d10	1719-06-8	0.25	%		81.1	80.0	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		88.6	84.3	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		83.9	91.7	89.4	----	----
Toluene-D8	2037-26-5	2	%		85.3	94.6	95.8	----	----
4-Bromofluorobenzene	460-00-4	2	%		106	118	116	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

Automated Guideline Comparison Report

EPA Victoria Publication IWRG 621 (2009) - Table 2: Soil Hazard Categorisation

Work Order	: EM1812809	Page	: 1 of 8
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN		
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Date Received	: 10-Aug-2018 17:30
Order number	:	Date Analysed	: 13-Aug-2018
C-O-C number	: ----	Date Issued	: 16-Aug-2018 15:38
No. of samples received	: 11		
No. of samples analysed	: 7	Quote number	: ME/124/18 - North East Link

General Comments

This guideline comparison report **only** provides evaluation of total concentration data against upper limit thresholds for the 'Fill Material', 'C', 'B' Categories in Table 2 of EPA Publication IWRG621.

This guideline comparison report is **NOT** a soil classification report. Classification of soils as Fill Material, Category C, Category B or Category A requires consideration of a number of other factors including preliminary site investigation, sampling density and statistical calculations, as set out in EPA Publication IWRG 702.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the IWRG621 (2009) guideline are analysed by ALS using the **P-16 package in full**.

Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit. Red shading is not applied to the 'Summary of Thresholds Reached or Exceeded'.

For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required IDs are listed and analysed.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.



Summary of Thresholds Reached or Exceeded

EPA Victoria Publication IWRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Client Sample ID	ALS Sample ID	Compound	Method	LOR	Limits	Result
NEL-BH184_1.0	EM1812809-003	Fluoride	EK040T	40	< 450 mg/kg	530 mg/kg
NEL-BH217_0.5	EM1812809-006	Fluoride	EK040T	40	< 450 mg/kg	520 mg/kg

Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B: Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Client sample ID		Guideline	Guideline	NEL-BH184_0.	NEL-BH184_1.	NEL-BH217_0.	NEL-BH217_1.	----	
				Sampling date/time	Lower Limit			Upper Limit	5	0	5	0	----
									09-Aug-2018 10:00	09-Aug-2018 10:00	09-Aug-2018 13:00	09-Aug-2018 13:00	----
Compound	Method	LOR	Unit			EM1812809-002	EM1812809-003	EM1812809-006	EM1812809-007	-----			
EA001: pH in soil using 0.01M CaCl extract													
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	7.0	5.9	5.3	5.7	----			
EG005T: Total Metals by ICP-AES													
Arsenic	EG005T	5	mg/kg	----	2000	5	<5	6	5	----			
Cadmium	EG005T	1	mg/kg	----	400	<1	<1	<1	<1	----			
Copper	EG005T	5	mg/kg	----	20000	15	20	20	26	----			
Lead	EG005T	5	mg/kg	----	6000	14	13	13	12	----			
Molybdenum	EG005T	2	mg/kg	----	4000	<2	<2	<2	<2	----			
Nickel	EG005T	2	mg/kg	----	12000	28	45	26	26	----			
Selenium	EG005T	5	mg/kg	----	200	<5	<5	<5	<5	----			
Silver	EG005T	2	mg/kg	----	720	<2	<2	<2	<2	----			
Zinc	EG005T	5	mg/kg	----	140000	34	46	41	66	----			
EG035T: Total Recoverable Mercury by FIMS													
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	<0.1	<0.1	<0.1	----			
EG048: Hexavalent Chromium (Alkaline Digest)													
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	<0.5	0.5	----			
EK026SF: Total CN by Segmented Flow Analyser													
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	<1	<1	<1	----			
EK040T: Fluoride Total													
Fluoride	EK040T	40	mg/kg	----	40000	390	530	520	410	----			
EP074A: Monocyclic Aromatic Hydrocarbons													
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	<0.2	<0.2	----			
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	<0.2	<0.2	----			
EP074I: Volatile Halogenated Compounds													
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	<0.02	<0.02	----			
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	<0.02	<0.02	----			
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	<0.01	<0.01	----			
EP075A: Phenolic Compounds (Halogenated)													
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	<0.03	<0.03	<0.03	----			
EP075A: Phenolic Compounds (Non-halogenated)													
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	<1	<1	----			
EP075B: Polynuclear Aromatic Hydrocarbons													



Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B: Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: SOIL

Sub-Matrix: SOIL				Client sample ID		Guideline	Guideline	NEL-BH184_0.	NEL-BH184_1.	NEL-BH217_0.	NEL-BH217_1.	----
				Sampling date/time	5			0	5	0	----	
					09-Aug-2018 10:00			09-Aug-2018 10:00	09-Aug-2018 13:00	09-Aug-2018 13:00	----	
Compound	Method	LOR	Unit	Lower Limit	Upper Limit	EM1812809-002	EM1812809-003	EM1812809-006	EM1812809-007	-----		
EP075B: Polynuclear Aromatic Hydrocarbons - Continued												
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	<0.5	<0.5	<0.5	<0.5	----		
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400	0.6	<0.5	<0.5	<0.5	----		
EP075I: Organochlorine Pesticides												
Heptachlor	EP075-EM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	<0.03	----		
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	<0.03	----		
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	<0.05	----		
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.03	<0.03	<0.03	<0.03	----		
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.03	<0.03	<0.03	<0.03	----		
EP080/071: Total Petroleum Hydrocarbons												
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	2600	<10	<10	<10	<10	----		
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	40000	<50	<50	<50	<50	----		

Table 2: Soil Hazard Categorisation Thresholds : Category C: Table 2: Soil Hazard Categorisation Thresholds : Category C

Client sample ID

Sub-Matrix: SOIL				Client sample ID		Guideline	Guideline	NEL-BH184_0.	NEL-BH184_1.	NEL-BH217_0.	NEL-BH217_1.	----
				Sampling date/time				5	0	5	0	----
				Lower Limit	Upper Limit			09-Aug-2018 10:00	09-Aug-2018 10:00	09-Aug-2018 13:00	09-Aug-2018 13:00	----
Compound	Method	LOR	Unit			EM1812809-002	EM1812809-003	EM1812809-006	EM1812809-007	-----		
EA001: pH in soil using 0.01M CaCl extract												
pH (CaCl2)	EA001	0.1	pH Unit	4	9	7.0	5.9	5.3	5.7	----		
EG005T: Total Metals by ICP-AES												
Arsenic	EG005T	5	mg/kg	----	500	5	<5	6	5	----		
Cadmium	EG005T	1	mg/kg	----	100	<1	<1	<1	<1	----		
Copper	EG005T	5	mg/kg	----	5000	15	20	20	26	----		
Lead	EG005T	5	mg/kg	----	1500	14	13	13	12	----		
Molybdenum	EG005T	2	mg/kg	----	1000	<2	<2	<2	<2	----		
Nickel	EG005T	2	mg/kg	----	3000	28	45	26	26	----		
Selenium	EG005T	5	mg/kg	----	50	<5	<5	<5	<5	----		
Silver	EG005T	2	mg/kg	----	180	<2	<2	<2	<2	----		
Tin	EG005T	5	mg/kg	----	500	<5	<5	<5	<5	----		
Zinc	EG005T	5	mg/kg	----	35000	34	46	41	66	----		
EG035T: Total Recoverable Mercury by FIMS												
Mercury	EG035T	0.1	mg/kg	----	75	<0.1	<0.1	<0.1	<0.1	----		
EG048: Hexavalent Chromium (Alkaline Digest)												
Hexavalent Chromium	EG048G	0.5	mg/kg	----	500	<0.5	<0.5	<0.5	0.5	----		
EK026SF: Total CN by Segmented Flow Analyser												
Total Cyanide	EK026SF	1	mg/kg	----	2500	<1	<1	<1	<1	----		
EK040T: Fluoride Total												
Fluoride	EK040T	40	mg/kg	----	10000	390	530	520	410	----		
EP074A: Monocyclic Aromatic Hydrocarbons												
Benzene	EP074-UT	0.2	mg/kg	----	4	<0.2	<0.2	<0.2	<0.2	----		
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	70	<0.2	<0.2	<0.2	<0.2	----		
EP074I: Volatile Halogenated Compounds												
Vinyl chloride	EP074-UT	0.02	mg/kg	----	1.2	<0.02	<0.02	<0.02	<0.02	----		
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	2.8	<0.02	<0.02	<0.02	<0.02	----		
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	10	<0.01	<0.01	<0.01	<0.01	----		
EP075A: Phenolic Compounds (Halogenated)												
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	<0.03	----		
EP075A: Phenolic Compounds (Non-halogenated)												
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	560	<1	<1	<1	<1	----		
EP075B: Polynuclear Aromatic Hydrocarbons												



Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C: Table 2: Soil Hazard Categorisation Thresholds : Category C

				Client sample ID		NEL-BH184_0.	NEL-BH184_1.	NEL-BH217_0.	NEL-BH217_1.	----
				Sampling date/time		5	0	5	0	----
				Guideline		09-Aug-2018 10:00	09-Aug-2018 10:00	09-Aug-2018 13:00	09-Aug-2018 13:00	----
Compound	Method	LOR	Unit	Lower Limit	Upper Limit	EM1812809-002	EM1812809-003	EM1812809-006	EM1812809-007	-----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued										
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	5	<0.5	<0.5	<0.5	<0.5	----
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100	0.6	<0.5	<0.5	<0.5	----
EP075I: Organochlorine Pesticides										
Heptachlor	EP075-EM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	<0.03	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	<0.03	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	<0.05	----
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4	<0.03	<0.03	<0.03	<0.03	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	<0.03	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	650	<10	<10	<10	<10	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	10000	<50	<50	<50	<50	----

Table 2: Soil Hazard Categorisation Thresholds : Fill Material: Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Client sample ID

Sub-Matrix: SOIL				Client sample ID		Guideline	Guideline	NEL-BH184_0.	NEL-BH184_1.	NEL-BH217_0.	NEL-BH217_1.	----	
				Sampling date/time	Lower Limit			Upper Limit	5	0	5	0	----
									09-Aug-2018 10:00	09-Aug-2018 10:00	09-Aug-2018 13:00	09-Aug-2018 13:00	----
Compound	Method	LOR	Unit				EM1812809-002	EM1812809-003	EM1812809-006	EM1812809-007	-----		
EA001: pH in soil using 0.01M CaCl extract													
pH (CaCl2)	EA001	0.1	pH Unit	4	9	7.0	5.9	5.3	5.7	----			
EG005T: Total Metals by ICP-AES													
Arsenic	EG005T	5	mg/kg	----	20	5	<5	6	5	----			
Cadmium	EG005T	1	mg/kg	----	3	<1	<1	<1	<1	----			
Copper	EG005T	5	mg/kg	----	100	15	20	20	26	----			
Lead	EG005T	5	mg/kg	----	300	14	13	13	12	----			
Molybdenum	EG005T	2	mg/kg	----	40	<2	<2	<2	<2	----			
Nickel	EG005T	2	mg/kg	----	60	28	45	26	26	----			
Selenium	EG005T	5	mg/kg	----	10	<5	<5	<5	<5	----			
Silver	EG005T	2	mg/kg	----	10	<2	<2	<2	<2	----			
Tin	EG005T	5	mg/kg	----	50	<5	<5	<5	<5	----			
Zinc	EG005T	5	mg/kg	----	200	34	46	41	66	----			
EG035T: Total Recoverable Mercury by FIMS													
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	<0.1	<0.1	<0.1	----			
EG048: Hexavalent Chromium (Alkaline Digest)													
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	0.5	----			
EK026SF: Total CN by Segmented Flow Analyser													
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	<1	<1	<1	----			
EK040T: Fluoride Total													
Fluoride	EK040T	40	mg/kg	----	450	390	530	520	410	----			
EP066: Polychlorinated Biphenyls (PCB)													
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	<0.1	<0.1	<0.1	----			
EP074A: Monocyclic Aromatic Hydrocarbons													
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	<0.2	<0.2	----			
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	<0.2	<0.2	----			
EP074I: Volatile Halogenated Compounds													
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	<0.01	<0.01	----			
EP075A: Phenolic Compounds (Halogenated)													
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	<0.03	----			
EP075A: Phenolic Compounds (Non-halogenated)													
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	<1	<1	----			
EP075B: Polynuclear Aromatic Hydrocarbons													



Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material: Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: SOIL

Sub-Matrix: SOIL				Client sample ID	Guideline	Guideline	NEL-BH184_0. 5	NEL-BH184_1. 0	NEL-BH217_0. 5	NEL-BH217_1. 0	----
Sampling date/time				09-Aug-2018 10:00			09-Aug-2018 10:00	09-Aug-2018 13:00	09-Aug-2018 13:00	----	
Compound	Method	LOR	Unit	EM1812809-002			EM1812809-003	EM1812809-006	EM1812809-007	-----	
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	<0.5	----	
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	0.6	<0.5	<0.5	<0.5	----	
EP075I: Organochlorine Pesticides											
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	<0.03	----	
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	100	<10	<10	<10	<10	----	
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	1000	<50	<50	<50	<50	----	


[illegible]

CHAIN OF CUSTODY RECORD

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8657 8000 Facsimile: 613 8657 8111

Job Number		GHD Office		Laboratory		Address		Lab Contact		Container		Analyses Required		PLEASE NOTE:	
31/35006/0910		Melbourne		ALS Springvale		2-4 Westall Rd, Springvale		Shirley LeCornu		Type				Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format	
Project		Contact Email		Quote No./GHD Reference		Composite Sample		Prevalence		Number		Volume (ml)		Remarks	
North East Link - Contamination		David Quinn		ME124/18		Sample Method: ALS EL		Sample Method: ALS EL		1		250			
Standard TAT		Date		Time		NA S		NIV J		1		250			
1	NEC-8H184 - 0.2	9.8.18	10:00												
2	" " - 0.5														
3	" " - 1.0														
4	" " - 1.5														
5	NEC-8H217 - 0.2		13:00												
6	" " - 0.5														
7	" " - 1.0														
8	" " - 1.5														
9	FB135		14:30												
10	KB135		"												
11	TB135		"												
<div style="text-align: right;"> <p>Environmental Division Melbourne Work Order Reference EM1812809</p>  <p>Telephone : + 61-3-8549 9600</p> </div>															

Sampled by:	Date/Time:	Relinquished by:	Date/Time:
KH			
LAB	15:00	9/8/18	
Received by Courier:			
Received by Lab:	10/8/18	5:30	
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)		

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 13 August 2018 10:01 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: ON HOLD-EM1812809 & EM1812810-GHD-31/35006/0910-NORTH EAST LINK CONTAMINATION
Attachments: 10082018184649-0001.pdf; 10082018185012-0001.pdf

Hi Shirley,

Please analyse the following at standard TAT:

EM1812809:

NEL-BH184_0.5m = IWRG621
NEL-BH184_1.0m = IWRG621
NEL-BH217_0.5m = IWRG621
NEL-BH217_1.0m = IWRG621

FB135 = IWRG621 water equivalent
RB135 = IWRG621 water equivalent
TB135 = Volatile TPH/BTEX

EM1812810:

NEL-EF-BH013_0.5m = IWRG621
NEL-EF-BH013_1.0m = IWRG621
NEL-EF-BH021_0.5m = IWRG621
NEL-EF-BH021_1.5m = IWRG621
NEL-EF-BH024_0.5m = IWRG621
NEL-EF-BH024_1.0m = IWRG621

RB136 = IWRG621 water equivalent
TB136 = Volatile TPH/BTEX
FB136 = IWRG621 water equivalent

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

-----Original Message-----

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>

Sent: Monday, 13 August 2018 7:16 AM

To: David Quinn <David.Quinn@ghd.com>; Kory Auch <Kory.Auch@ghd.com>

Subject: FW: ON HOLD-EM1812809 & EM1812810-GHD-31/35006/0910-NORTH EAST LINK CONTAMINATION

QUALITY CONTROL REPORT

Work Order	: EM1812809	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 10-Aug-2018
Order number	: ----	Date Analysis Commenced	: 13-Aug-2018
C-O-C number	: ----	Issue Date	: 16-Aug-2018
Sampler	: KH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 11		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1869478)									
EM1812725-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	5.0	5.1	1.98	0% - 20%
EM1812771-010	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.8	7.9	1.27	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1869335)									
EM1812809-002	NEL-BH184_0.5	EA055: Moisture Content	----	0.1	%	12.2	16.9	31.9	0% - 50%
EM1812827-001	Anonymous	EA055: Moisture Content	----	0.1	%	11.1	12.7	13.4	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1868642)									
EM1812809-002	NEL-BH184_0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	28	31	8.01	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	15	16	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	15	7.03	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	34	39	11.4	No Limit
EM1812825-007	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	6	20.1	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	16	14	17.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	9	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1868642) - continued									
EM1812825-007	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	6	6	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1868641)									
EM1812809-002	NEL-BH184_0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1812825-007	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1869462)									
EM1812725-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1812809-007	NEL-BH217_1.0	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	0.5	0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1869537)									
EM1812725-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1812771-019	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1868713)									
EM1812809-002	NEL-BH184_0.5	EK040T: Fluoride	16984-48-8	40	mg/kg	390	400	0.00	No Limit
EM1812827-004	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	230	210	9.95	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1869055)									
EM1812771-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1812810-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1868950)									
EM1812771-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1812810-003	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1868950)									
EM1812771-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1812810-003	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1868950)									
EM1812771-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1868950) - continued									
EM1812771-001	Anonymous	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1812810-003	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1869053)									
EM1812771-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1869053) - continued									
EM1812771-001	Anonymous	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1812810-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1869053)									
EM1812771-001	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1812810-003	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EM1812771-001	Anonymous	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1869053)							
		EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1869053) - continued									
EM1812771-001	Anonymous	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	1.8	0.6	100	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	0.6	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	3.4	1.3	88.1	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	3.6	1.4	87.9	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	1.8	0.8	78.3	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	1.8	0.8	78.1	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	3.1	1.5	68.4	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	2.0	0.9	72.7	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	1.0	<0.5	65.0	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	1.2	0.6	66.0	No Limit
EM1812810-003	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	1.0	1.1	13.8	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	1.6	1.6	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	1.6	1.7	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	0.9	1.0	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	0.8	1.0	16.7	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	1.4	1.6	16.5	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	1.0	1.1	13.9	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.6	0.6	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1869053)									
EM1812771-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1869053) - continued									
EM1812771-001	Anonymous	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1812810-003	Anonymous	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1868950)									
EM1812771-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1812810-003	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1869054)									
EM1812771-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	200	<100	69.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	120	<100	21.4	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1812810-003	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

Sub-Matrix: SOIL					Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1869054) - continued									
EM1812810-003	Anonymous	EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1868950)									
EM1812771-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1812810-003	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1869054)									
EM1812771-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	300	140	74.6	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1812810-003	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER					Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1870928)									
EM1812651-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.12	6.63	7.13	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1873616)									
EM1812707-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1812797-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0011	0.0010	14.8	0% - 50%
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.055	0.055	0.00	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.709	0.730	2.93	0% - 20%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.825	0.845	2.34	0% - 20%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1873618)									
EM1812809-009	FB135	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1873617)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 1873617) - continued									
EM1812837-022	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1871589)									
EM1812809-009	FB135	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1868708)									
EM1812757-009	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1812791-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1870929)									
EM1812809-010	RS135	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1869400)									
EM1812515-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1812791-002	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1869400)									
EM1812515-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1812791-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit

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 Work Order : EM1812809
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1869400) - continued									
EM1812791-002	Anonymous	EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1869400)									
EM1812515-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1812791-002	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1869400)									
EM1812515-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1812791-002	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1869401)									
EM1812515-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1812791-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1869401)									
EM1812515-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1812791-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1869401)									
EM1812515-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	3	3	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1812791-002	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit		



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1868642)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	89.5	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	86.1	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	93.4	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	86.6	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	86.4	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	94.0	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	100	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	96.0	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	96.3	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	89.6	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1868641)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	82.4	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1869462)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	78.4	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1869537)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	98.1	80	110
EK040T: Fluoride Total (QCLot: 1868713)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	93.5	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1869055)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	107	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1868950)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	97.0	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	102	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	102	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	97.4	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	100	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	100	74	114
EP074H: Naphthalene (QCLot: 1868950)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	105	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1868950)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	110	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	99.4	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1868950) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	94.1	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	104	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	93.6	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	96.7	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	108	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	109	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	98.7	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	102	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	98.3	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	105	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	106	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	103	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	74.7	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	108	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	102	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	101	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	81.0	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1869053)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	89.6	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	89.8	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	90.0	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	89.5	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	90.9	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	90.1	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	86.4	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	91.1	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	92.8	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1869053)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	90.6	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	87.0	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	89.5	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	86.8	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	85.7	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	24 mg/kg	72.8	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	79.9	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	70.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	74.7	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	95.4	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1869053)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	89.8	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	92.3	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	91.4	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	90.9	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	93.7	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	93.2	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	99.5	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	100	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	108	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	108	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	106	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	106	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	98.4	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	97.8	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	99.8	55	137
EP075I: Organochlorine Pesticides (QCLot: 1869053)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	91.6	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	90.6	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	94.7	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	92.4	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	97.6	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	90.2	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	91.5	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	93.0	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	97.1	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	94.8	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	124	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	100	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	96.9	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	114	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	81.5	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	100	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	105	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	102	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	101	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	104	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1868950)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	108	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1873616)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.6	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.3	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.5	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.1	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.1	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	99.8	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	103	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1873618)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	106	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1873617)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	89.8	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1871589)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1868708)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	100	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1870929)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	105	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1868869)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	89.7	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1869400)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1869400) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	100	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1869400)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	110	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	106	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	97.5	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	109	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	104	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	109	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	110	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	98.2	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	106	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	98.0	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	103	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	107	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	94.8	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	107	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1869400)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	102	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	107	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	101	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	108	62	119
EP074G: Trihalomethanes (QCLot: 1869400)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	107	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1868870)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	63.0	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	62.9	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	65.3	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	72.5	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	80.6	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	80.4	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	86.9	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	85.9	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	88.4	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	87.5	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	82.0	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	81.7	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	81.4	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
							Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1868870) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	78.8	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	77.9	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	76.9	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1868872)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	69.2	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	61.0	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	62.4	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	62.1	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	83.7	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	68.2	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	83.8	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	82.9	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	75.7	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1868872)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	27.0	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	60.6	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	51.3	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	64.3	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	66.0	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	120 µg/L	73.0	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	26.7	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	69.8	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	78.4	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	123	32	135
EP075I: Organochlorine Pesticides (QCLot: 1868872)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	85.9	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	92.0	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	90.4	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	94.5	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	94.5	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	95.8	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	98.3	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	89.2	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	92.8	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1868871)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	87.7	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	92.7	60	133

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report

Spike

SpikeRecovery(%)

Recovery Limits (%)

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1868642)							
EM1812809-003	NEL-BH184_1.0	EG005T: Arsenic	7440-38-2	50 mg/kg	95.8	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.1	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	98.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	99.8	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	84.4	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	92.6	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	80.0	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	112	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1868641)							
EM1812809-003	NEL-BH184_1.0	EG035T: Mercury	7439-97-6	5 mg/kg	80.6	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1869462)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1869462) - continued							
EM1812771-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	60.0	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1869537)							
EM1812725-005	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	106	77	113
EK040T: Fluoride Total (QCLot: 1868713)							
EM1812809-003	NEL-BH184_1.0	EK040T: Fluoride	16984-48-8	400 mg/kg	107	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1869055)							
EM1812771-010	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	100	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1868950)							
EM1812771-003	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	103	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	104	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1868950)							
EM1812771-003	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	106	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	102	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	111	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1869053)							
EM1812771-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	85.5	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	62.0	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	45.0	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1869053)							
EM1812771-003	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	69.6	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	60.3	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1869053)							
EM1812771-003	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	74.9	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	88.0	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1868950)							
EM1812771-003	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	87.4	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1869054)							
EM1812771-007	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	98.4	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	102	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	96.8	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1868950)							
EM1812771-003	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	84.4	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1869054)							
EM1812771-007	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	98.9	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	101	67	121

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 Work Order : EM1812809
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1869054) - continued							
EM1812771-007	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	90.9	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1873616)							
EM1812707-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	96.9	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	89.9	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.3	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.4	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	90.7	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	91.0	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1873617)							
EM1812786-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	81.7	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1871589)							
EM1812809-010	RS135	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	107	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1868708)							
EM1812757-010	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	75.2	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1870929)							
EM1812810-008	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	104	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1869400)							
EM1812515-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	96.0	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	85.2	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1869400)							
EM1812515-002	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	85.4	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1869401)							
EM1812515-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	98.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1869401)							
EM1812515-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	99.6	44	122
EP080: BTEXN (QCLot: 1869401)							
EM1812515-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	104	68	130
		EP080: Toluene	108-88-3	20 µg/L	106	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1812809	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 10-Aug-2018
Site	: ----	Issue Date	: 16-Aug-2018
Sampler	: KH	No. of samples received	: 11
Order number	:	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural FB135, RS135	----	----	----	14-Aug-2018	09-Aug-2018	5

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Dissolved Mercury by FIMS	1	19	5.26	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract									
Soil Glass Jar - Unpreserved (EA001) NEL-BH184_0.5, NEL-BH217_0.5,		NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	14-Aug-2018	16-Aug-2018	✓	14-Aug-2018	14-Aug-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)									
Soil Glass Jar - Unpreserved (EA055) NEL-BH184_0.5, NEL-BH217_0.5,		NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	----	----	----	13-Aug-2018	23-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH184_0.5, NEL-BH217_0.5,	NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	13-Aug-2018	05-Feb-2019	✓	13-Aug-2018	05-Feb-2019	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH184_0.5, NEL-BH217_0.5,	NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	13-Aug-2018	06-Sep-2018	✓	13-Aug-2018	06-Sep-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH184_0.5, NEL-BH217_0.5,	NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	14-Aug-2018	06-Sep-2018	✓	14-Aug-2018	21-Aug-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH184_0.5, NEL-BH217_0.5,	NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	13-Aug-2018	23-Aug-2018	✓	14-Aug-2018	27-Aug-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH184_0.5, NEL-BH217_0.5,	NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	13-Aug-2018	06-Sep-2018	✓	14-Aug-2018	06-Sep-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH184_0.5, NEL-BH217_0.5,	NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	13-Aug-2018	23-Aug-2018	✓	14-Aug-2018	22-Sep-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH184_0.5, NEL-BH217_0.5,	NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	13-Aug-2018	16-Aug-2018	✓	14-Aug-2018	16-Aug-2018	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH184_0.5, NEL-BH217_0.5,	NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	13-Aug-2018	16-Aug-2018	✓	14-Aug-2018	16-Aug-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH184_0.5, NEL-BH217_0.5,	NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	13-Aug-2018	16-Aug-2018	✓	14-Aug-2018	16-Aug-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH184_0.5, NEL-BH217_0.5,	NEL-BH184_1.0, NEL-BH217_1.0	09-Aug-2018	13-Aug-2018	23-Aug-2018	✓	14-Aug-2018	22-Sep-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH184_0.5,	NEL-BH184_1.0,	09-Aug-2018	13-Aug-2018	23-Aug-2018	✔	14-Aug-2018	22-Sep-2018	✔
NEL-BH217_0.5,	NEL-BH217_1.0							
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH184_0.5,	NEL-BH184_1.0,	09-Aug-2018	13-Aug-2018	23-Aug-2018	✔	14-Aug-2018	22-Sep-2018	✔
NEL-BH217_0.5,	NEL-BH217_1.0							
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
NEL-BH184_0.5,	NEL-BH184_1.0,	09-Aug-2018	13-Aug-2018	23-Aug-2018	✔	14-Aug-2018	22-Sep-2018	✔
NEL-BH217_0.5,	NEL-BH217_1.0							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH184_0.5,	NEL-BH184_1.0,	09-Aug-2018	13-Aug-2018	16-Aug-2018	✔	14-Aug-2018	16-Aug-2018	✔
NEL-BH217_0.5,	NEL-BH217_1.0							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-BH184_0.5,	NEL-BH184_1.0,	09-Aug-2018	13-Aug-2018	16-Aug-2018	✔	14-Aug-2018	16-Aug-2018	✔
NEL-BH217_0.5,	NEL-BH217_1.0							

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	RS135	09-Aug-2018	----	----	----	14-Aug-2018	09-Aug-2018	✘
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Natural (EG020B-F)	RS135	09-Aug-2018	----	----	----	15-Aug-2018	05-Feb-2019	✔
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Natural (EG035F)	RS135	09-Aug-2018	----	----	----	16-Aug-2018	06-Sep-2018	✔
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	RS135	09-Aug-2018	----	----	----	14-Aug-2018	06-Sep-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)	RS135	09-Aug-2018	----	----	----	13-Aug-2018	23-Aug-2018	✔
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	RS135	09-Aug-2018	----	----	----	14-Aug-2018	06-Sep-2018	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation				Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) FB135,	RS135	09-Aug-2018	13-Aug-2018	16-Aug-2018	✓	14-Aug-2018	22-Sep-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) FB135,	RS135	09-Aug-2018	13-Aug-2018	23-Aug-2018	✓	13-Aug-2018	23-Aug-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB135,	RS135	09-Aug-2018	13-Aug-2018	23-Aug-2018	✓	13-Aug-2018	23-Aug-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) FB135,	RS135	09-Aug-2018	13-Aug-2018	23-Aug-2018	✓	13-Aug-2018	23-Aug-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) FB135,	RS135	09-Aug-2018	13-Aug-2018	23-Aug-2018	✓	13-Aug-2018	23-Aug-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) FB135,	RS135	09-Aug-2018	13-Aug-2018	16-Aug-2018	✓	14-Aug-2018	22-Sep-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB135,	RS135	09-Aug-2018	13-Aug-2018	16-Aug-2018	✓	15-Aug-2018	22-Sep-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) FB135,	RS135	09-Aug-2018	13-Aug-2018	16-Aug-2018	✓	15-Aug-2018	22-Sep-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) FB135,	RS135	09-Aug-2018	13-Aug-2018	16-Aug-2018	✓	15-Aug-2018	22-Sep-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) FB135,	RS135	09-Aug-2018	13-Aug-2018	16-Aug-2018	✓	15-Aug-2018	22-Sep-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB135, TB135	RS135,	09-Aug-2018	13-Aug-2018	23-Aug-2018	✓	13-Aug-2018	23-Aug-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071) FB135,	RS135	09-Aug-2018	13-Aug-2018	16-Aug-2018	✓	15-Aug-2018	22-Sep-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) FB135, TB135	RS135,	09-Aug-2018	13-Aug-2018	23-Aug-2018	✓	13-Aug-2018	23-Aug-2018	✓



Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) FB135, TB135	RS135,	09-Aug-2018	13-Aug-2018	23-Aug-2018	✓	13-Aug-2018	23-Aug-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	1	19	5.26	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	1	10	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1812810**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **KH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **14**
No. of samples analysed : **9**

Page : 1 of 19
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 10-Aug-2018 17:30
Date Analysis Commenced : 13-Aug-2018
Issue Date : 17-Aug-2018 14:50



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH013_0.5	NEL-EF-BH013_1.0	NEL-EF-BH021_0.5	NEL-EF-BH021_1.5	NEL-EF-BH024_0.5
Client sampling date / time					10-Aug-2018 10:00	10-Aug-2018 10:00	10-Aug-2018 13:30	10-Aug-2018 13:30	10-Aug-2018 15:30
Compound	CAS Number	LOR	Unit		EM1812810-002	EM1812810-003	EM1812810-005	EM1812810-007	EM1812810-012
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.7	7.7	6.7	7.0	7.1
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		14.0	18.4	20.0	17.1	14.2
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	7	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg		14	30	10	10	14
Lead	7439-92-1	5	mg/kg		20	29	13	11	15
Molybdenum	7439-98-7	2	mg/kg		<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg		20	47	15	14	20
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg		<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg		34	52	22	48	40
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	<1	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		340	380	310	310	340
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH013_0.5	NEL-EF-BH013_1.0	NEL-EF-BH021_0.5	NEL-EF-BH021_1.5	NEL-EF-BH024_0.5
Client sampling date / time					10-Aug-2018 10:00	10-Aug-2018 10:00	10-Aug-2018 13:30	10-Aug-2018 13:30	10-Aug-2018 15:30
Compound	CAS Number	LOR	Unit		EM1812810-002	EM1812810-003	EM1812810-005	EM1812810-007	EM1812810-012
					Result	Result	Result	Result	Result
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.03	<0.03

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH013_0.5	NEL-EF-BH013_1.0	NEL-EF-BH021_0.5	NEL-EF-BH021_1.5	NEL-EF-BH024_0.5
Client sampling date / time				10-Aug-2018 10:00	10-Aug-2018 10:00	10-Aug-2018 13:30	10-Aug-2018 13:30	10-Aug-2018 15:30	
Compound	CAS Number	LOR	Unit	EM1812810-002	EM1812810-003	EM1812810-005	EM1812810-007	EM1812810-012	
				Result	Result	Result	Result	Result	
EP075A: Phenolic Compounds (Halogenated) - Continued									
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg	<1	<1	<1	<1	<1	
2-Methylphenol	95-48-7	1	mg/kg	<1	<1	<1	<1	<1	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1	
2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	<1	<1	<1	
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	<5	<5	<5	
4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	<5	<5	<5	
Dinoseb	88-85-7	5	mg/kg	<5	<5	<5	<5	<5	
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	<5	<5	<5	
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	<1	<1	<1	<1	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	0.9	1.0	<0.5	<0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	0.9	1.6	<0.5	<0.5	<0.5	
Pyrene	129-00-0	0.5	mg/kg	0.9	1.6	<0.5	<0.5	<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	0.9	<0.5	<0.5	<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	0.8	<0.5	<0.5	<0.5	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	0.6	1.4	<0.5	<0.5	<0.5	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.0	<0.5	<0.5	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	0.6	<0.5	<0.5	<0.5	
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	3.3	8.9	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	1.2	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	1.5	0.6	0.6	0.6	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.8	1.2	1.2	1.2	
EP075I: Organochlorine Pesticides									



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-EF-BH013_0.5	NEL-EF-BH013_1.0	NEL-EF-BH021_0.5	NEL-EF-BH021_1.5	NEL-EF-BH024_0.5
Client sampling date / time				10-Aug-2018 10:00	10-Aug-2018 10:00	10-Aug-2018 13:30	10-Aug-2018 13:30	10-Aug-2018 15:30
Compound	CAS Number	LOR	Unit	EM1812810-002	EM1812810-003	EM1812810-005	EM1812810-007	EM1812810-012
				Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH013_0.5	NEL-EF-BH013_1.0	NEL-EF-BH021_0.5	NEL-EF-BH021_1.5	NEL-EF-BH024_0.5
Client sampling date / time					10-Aug-2018 10:00	10-Aug-2018 10:00	10-Aug-2018 13:30	10-Aug-2018 13:30	10-Aug-2018 15:30
Compound	CAS Number	LOR	Unit		EM1812810-002	EM1812810-003	EM1812810-005	EM1812810-007	EM1812810-012
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		97.9	90.6	89.5	110	111
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		78.7	64.2	77.7	79.8	79.1
Toluene-D8	2037-26-5	0.1	%		77.0	63.4	69.8	76.3	77.0
4-Bromofluorobenzene	460-00-4	0.1	%		86.9	78.0	79.9	95.5	87.4
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		93.0	93.3	92.7	95.2	104
2-Chlorophenol-D4	93951-73-6	0.025	%		74.0	74.5	73.5	75.4	82.6
2,4,6-Tribromophenol	118-79-6	0.025	%		77.8	81.5	75.5	74.0	84.4
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		86.4	85.8	85.4	86.5	95.0
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		81.6	82.9	80.0	82.5	90.4
2-Fluorobiphenyl	321-60-8	0.025	%		90.5	90.3	88.7	92.2	101
Anthracene-d10	1719-06-8	0.025	%		93.6	92.7	92.0	95.0	104
4-Terphenyl-d14	1718-51-0	0.025	%		103	101	98.3	103	113



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-EF-BH024_1.0	----	----	----	----
Client sampling date / time				10-Aug-2018 15:30	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1812810-013	-----	-----	-----	-----
Result				----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	7.1	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	22.6	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	8	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	20	----	----	----	----
Lead	7439-92-1	5	mg/kg	15	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	34	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	62	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	300	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH024_1.0	----	----	----	----
Client sampling date / time					10-Aug-2018 15:30	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1812810-013	-----	-----	-----	-----
				Result		----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH024_1.0	----	----	----	----
				Client sampling date / time	10-Aug-2018 15:30	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1812810-013	-----	-----	-----	-----
					Result	----	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH024_1.0	----	----	----	----
Client sampling date / time					10-Aug-2018 15:30	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1812810-013	-----	-----	-----	-----
				Result	----	----	----	----	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-EF-BH024_1.0	----	----	----	----
Client sampling date / time				10-Aug-2018 15:30	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1812810-013	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	108	----	----	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	80.6	----	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	78.0	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	86.7	----	----	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%	96.6	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%	77.6	----	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%	77.5	----	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%	88.8	----	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	85.6	----	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%	94.4	----	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%	97.0	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%	105	----	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RS136	TB136	FB136	----	----
Client sampling date / time				10-Aug-2018 15:00	10-Aug-2018 15:00	10-Aug-2018 15:00	----	----
Compound	CAS Number	LOR	Unit	EM1812810-008	EM1812810-009	EM1812810-010	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.52	----	6.28	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	----	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	<0.0001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	<0.01	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	<0.005	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	<0.0001	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	----	<0.01	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	----	<0.004	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	----	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	----	<1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	----	<5	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	----	<50	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	----	<5	----	----
Methylene chloride	75-09-2	5	µg/L	<5	----	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	----	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	----	<5	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	----	<5	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	----	<5	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	----	<5	----	----
Trichloroethene	79-01-6	5	µg/L	<5	----	<5	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RS136	TB136	FB136	----	----
Client sampling date / time				10-Aug-2018 15:00	10-Aug-2018 15:00	10-Aug-2018 15:00	----	----
Compound	CAS Number	LOR	Unit	EM1812810-008	EM1812810-009	EM1812810-010	-----	-----
				Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	----	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	----	<5	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	----	<5	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	----	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	----	<5	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	----	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	----	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	----	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	----	<5	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	----	<5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	<1.0	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	<1.0	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	<1.0	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	<1.0	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	<1.0	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	<1.0	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	----	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	<1.0	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	<1.0	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	<0.5	----	----
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	2	µg/L	<2	----	<2	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L	<2	----	<2	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RS136	TB136	FB136	----	----
Client sampling date / time				10-Aug-2018 15:00	10-Aug-2018 15:00	10-Aug-2018 15:00	----	----
Compound	CAS Number	LOR	Unit	EM1812810-008	EM1812810-009	EM1812810-010	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	----	<2	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	----	<4	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	----	<2	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	----	<2	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	----	<2	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	----	<2	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	----	<2	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	----	<4	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	----	<4	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	----	<4	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	----	<4	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	----	<4	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	----	<100	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	----	<50	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	----	<50	----	----
Dinoseb	88-85-7	50	µg/L	<50	----	<50	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	----	<50	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	<0.5	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	<0.5	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	<0.5	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	<0.5	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	<0.5	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	----	<0.5	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	<0.5	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	----	<0.5	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	----	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	<50	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RS136	TB136	FB136	----	----
Client sampling date / time					10-Aug-2018 15:00	10-Aug-2018 15:00	10-Aug-2018 15:00	----	----
Compound	CAS Number	LOR	Unit		EM1812810-008	EM1812810-009	EM1812810-010	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	<100	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	<100	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	----	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	----	<100	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		72.8	----	97.4	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		90.2	----	94.2	----	----
Toluene-D8	2037-26-5	5	%		78.8	----	79.6	----	----
4-Bromofluorobenzene	460-00-4	5	%		92.7	----	95.6	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		27.8	----	31.1	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		62.8	----	71.2	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		53.5	----	66.6	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		68.2	----	80.1	----	----
Anthracene-d10	1719-06-8	1.0	%		69.8	----	90.0	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		71.0	----	95.2	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RS136	TB136	FB136	----	----
Client sampling date / time					10-Aug-2018 15:00	10-Aug-2018 15:00	10-Aug-2018 15:00	----	----
Compound	CAS Number	LOR	Unit		EM1812810-008	EM1812810-009	EM1812810-010	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		28.3	----	30.1	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		65.7	----	67.7	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		70.3	----	81.4	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		75.2	----	77.5	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		76.2	----	76.8	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		82.4	----	83.0	----	----
Anthracene-d10	1719-06-8	0.25	%		81.6	----	93.3	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		85.2	----	103	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		95.1	94.8	91.8	----	----
Toluene-D8	2037-26-5	2	%		82.3	87.9	80.0	----	----
4-Bromofluorobenzene	460-00-4	2	%		108	112	106	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136

Page : 19 of 19
Work Order : EM1812810
Client : GHD PTY LTD
Project : 31350060910



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

Automated Guideline Comparison Report

EPA Victoria Publication IWRG 621 (2009) - Table 2: Soil Hazard Categorisation

Work Order	: EM1812810	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN		
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: david.quinn@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060910	Date Received	: 10-Aug-2018 17:30
Order number	:	Date Analysed	: 13-Aug-2018
C-O-C number	: ----	Date Issued	: 17-Aug-2018 14:50
No. of samples received	: 14		
No. of samples analysed	: 9	Quote number	: ME/124/18 - North East Link

General Comments

This guideline comparison report **only** provides evaluation of total concentration data against upper limit thresholds for the 'Fill Material', 'C', 'B' Categories in Table 2 of EPA Publication IWRG621.

This guideline comparison report is **NOT** a soil classification report. Classification of soils as Fill Material, Category C, Category B or Category A requires consideration of a number of other factors including preliminary site investigation, sampling density and statistical calculations, as set out in EPA Publication IWRG 702.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the IWRG621 (2009) guideline are analysed by ALS using the **P-16 package in full**.

Red shading is applied where the result is equal to or greater than the guideline upper limit and/or equal to or lower than the guideline lower limit. Red shading is not applied to the 'Summary of Thresholds Reached or Exceeded'.

For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required IDs are listed and analysed.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.



Summary of Thresholds Reached or Exceeded

EPA Victoria Publication IWRG 621 (2009)

Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Client Sample ID	ALS Sample ID	Compound	Method	LOR	Limits	Result
NEL-EF-BH013_1.0	EM1812810-003	Benzo(a)pyrene	EP075-EM	0.5	< 1 mg/kg	1.0 mg/kg

Soil Hazard Categorisation and Management

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Client sample ID		Guideline	Guideline	NEL-EF-BH013	NEL-EF-BH013	NEL-EF-BH021	NEL-EF-BH021	NEL-EF-BH024
				Sampling date/time				_0.5	_1.0	_0.5	_1.5	_0.5
								10-Aug-2018 10:00	10-Aug-2018 10:00	10-Aug-2018 13:30	10-Aug-2018 13:30	10-Aug-2018 15:30
Compound	Method	LOR	Unit	Lower Limit	Upper Limit	EM1812810-002	EM1812810-003	EM1812810-005	EM1812810-007	EM1812810-012		
EA001: pH in soil using 0.01M CaCl extract												
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	7.7	7.7	6.7	7.0	7.1		
EG005T: Total Metals by ICP-AES												
Arsenic	EG005T	5	mg/kg	----	2000	6	7	<5	<5	<5		
Cadmium	EG005T	1	mg/kg	----	400	<1	<1	<1	<1	<1		
Copper	EG005T	5	mg/kg	----	20000	14	30	10	10	14		
Lead	EG005T	5	mg/kg	----	6000	20	29	13	11	15		
Molybdenum	EG005T	2	mg/kg	----	4000	<2	<2	<2	<2	<2		
Nickel	EG005T	2	mg/kg	----	12000	20	47	15	14	20		
Selenium	EG005T	5	mg/kg	----	200	<5	<5	<5	<5	<5		
Silver	EG005T	2	mg/kg	----	720	<2	<2	<2	<2	<2		
Zinc	EG005T	5	mg/kg	----	140000	34	52	22	48	40		
EG035T: Total Recoverable Mercury by FIMS												
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	<0.1	<0.1	<0.1	<0.1		
EG048: Hexavalent Chromium (Alkaline Digest)												
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	<0.5	<0.5	<0.5	<0.5		
EK026SF: Total CN by Segmented Flow Analyser												
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	<1	<1	<1	<1		
EK040T: Fluoride Total												
Fluoride	EK040T	40	mg/kg	----	40000	340	380	310	310	340		
EP074A: Monocyclic Aromatic Hydrocarbons												
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	<0.2	<0.2	<0.2	<0.2		
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	<0.2	<0.2	<0.2	<0.2		
EP074I: Volatile Halogenated Compounds												
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	<0.02	<0.02	<0.02	<0.02		
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	<0.02	<0.02	<0.02	<0.02		
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	<0.01	<0.01	<0.01	<0.01		
EP075A: Phenolic Compounds (Halogenated)												
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	<0.03	<0.03	<0.03	<0.03		
EP075A: Phenolic Compounds (Non-halogenated)												
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	<1	<1	<1	<1		
EP075B: Polynuclear Aromatic Hydrocarbons												



Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B: Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: SOIL				Client sample ID		Guideline	Guideline	NEL-EF-BH013	NEL-EF-BH013	NEL-EF-BH021	NEL-EF-BH021	NEL-EF-BH024
				<u>0.5</u>	<u>1.0</u>			<u>0.5</u>	<u>1.5</u>	<u>0.5</u>		
Sampling date/time				Guideline	Guideline			10-Aug-2018 10:00	10-Aug-2018 10:00	10-Aug-2018 13:30	10-Aug-2018 13:30	10-Aug-2018 15:30
Compound	Method	LOR	Unit	Lower Limit	Upper Limit	EM1812810-002	EM1812810-003	EM1812810-005	EM1812810-007	EM1812810-012		
EP075B: Polynuclear Aromatic Hydrocarbons - Continued												
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	<0.5	1.0	<0.5	<0.5	<0.5		
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	400	3.3	8.9	<0.5	<0.5	<0.5		
EP075I: Organochlorine Pesticides												
Heptachlor	EP075-EM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	<0.03	<0.03		
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	4.8	<0.03	<0.03	<0.03	<0.03	<0.03		
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	<0.05	<0.05		
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	16	<0.03	<0.03	<0.03	<0.03	<0.03		
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	50	<0.03	<0.03	<0.03	<0.03	<0.03		
EP080/071: Total Petroleum Hydrocarbons												
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	2600	<10	<10	<10	<10	<10		
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	40000	<50	<50	<50	<50	<50		

Table 2: Soil Hazard Categorisation Thresholds : Category C: Table 2: Soil Hazard Categorisation Thresholds : Category C

Client sample ID

Sub-Matrix: SOIL				Client sample ID		Guideline	Guideline	NEL-EF-BH013	NEL-EF-BH013	NEL-EF-BH021	NEL-EF-BH021	NEL-EF-BH024
				Sampling date/time				_0.5	_1.0	_0.5	_1.5	_0.5
				Lower Limit	Upper Limit			10-Aug-2018 10:00	10-Aug-2018 10:00	10-Aug-2018 13:30	10-Aug-2018 13:30	10-Aug-2018 15:30
Compound	Method	LOR	Unit			EM1812810-002	EM1812810-003	EM1812810-005	EM1812810-007	EM1812810-012		
EA001: pH in soil using 0.01M CaCl extract												
pH (CaCl2)	EA001	0.1	pH Unit	4	9	7.7	7.7	6.7	7.0	7.1		
EG005T: Total Metals by ICP-AES												
Arsenic	EG005T	5	mg/kg	----	500	6	7	<5	<5	<5		
Cadmium	EG005T	1	mg/kg	----	100	<1	<1	<1	<1	<1		
Copper	EG005T	5	mg/kg	----	5000	14	30	10	10	14		
Lead	EG005T	5	mg/kg	----	1500	20	29	13	11	15		
Molybdenum	EG005T	2	mg/kg	----	1000	<2	<2	<2	<2	<2		
Nickel	EG005T	2	mg/kg	----	3000	20	47	15	14	20		
Selenium	EG005T	5	mg/kg	----	50	<5	<5	<5	<5	<5		
Silver	EG005T	2	mg/kg	----	180	<2	<2	<2	<2	<2		
Tin	EG005T	5	mg/kg	----	500	<5	<5	<5	<5	<5		
Zinc	EG005T	5	mg/kg	----	35000	34	52	22	48	40		
EG035T: Total Recoverable Mercury by FIMS												
Mercury	EG035T	0.1	mg/kg	----	75	<0.1	<0.1	<0.1	<0.1	<0.1		
EG048: Hexavalent Chromium (Alkaline Digest)												
Hexavalent Chromium	EG048G	0.5	mg/kg	----	500	<0.5	<0.5	<0.5	<0.5	<0.5		
EK026SF: Total CN by Segmented Flow Analyser												
Total Cyanide	EK026SF	1	mg/kg	----	2500	<1	<1	<1	<1	<1		
EK040T: Fluoride Total												
Fluoride	EK040T	40	mg/kg	----	10000	340	380	310	310	340		
EP074A: Monocyclic Aromatic Hydrocarbons												
Benzene	EP074-UT	0.2	mg/kg	----	4	<0.2	<0.2	<0.2	<0.2	<0.2		
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	70	<0.2	<0.2	<0.2	<0.2	<0.2		
EP074I: Volatile Halogenated Compounds												
Vinyl chloride	EP074-UT	0.02	mg/kg	----	1.2	<0.02	<0.02	<0.02	<0.02	<0.02		
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	2.8	<0.02	<0.02	<0.02	<0.02	<0.02		
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	10	<0.01	<0.01	<0.01	<0.01	<0.01		
EP075A: Phenolic Compounds (Halogenated)												
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	<0.03	<0.03		
EP075A: Phenolic Compounds (Non-halogenated)												
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	560	<1	<1	<1	<1	<1		
EP075B: Polynuclear Aromatic Hydrocarbons												



Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C: Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: SOIL

Sub-Matrix: SOIL				Client sample ID		Guideline	Guideline	NEL-EF-BH013	NEL-EF-BH013	NEL-EF-BH021	NEL-EF-BH021	NEL-EF-BH024
				Sampling date/time								
Compound	Method	LOR	Unit	Lower Limit	Upper Limit	10-Aug-2018 10:00	10-Aug-2018 10:00	10-Aug-2018 13:30	10-Aug-2018 13:30	10-Aug-2018 15:30		
EP075B: Polynuclear Aromatic Hydrocarbons - Continued												
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	5	<0.5	1.0	<0.5	<0.5	<0.5		
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	100	3.3	8.9	<0.5	<0.5	<0.5		
EP075I: Organochlorine Pesticides												
Heptachlor	EP075-EM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	<0.03	<0.03		
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg	----	1.2	<0.03	<0.03	<0.03	<0.03	<0.03		
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg	----	50	<0.05	<0.05	<0.05	<0.05	<0.05		
Chlordane	EP075-EM-SUM	0.03	mg/kg	----	4	<0.03	<0.03	<0.03	<0.03	<0.03		
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	<0.03	<0.03	<0.03	<0.03		
EP080/071: Total Petroleum Hydrocarbons												
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	650	<10	<10	<10	<10	<10		
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	10000	<50	<50	<50	<50	<50		

Table 2: Soil Hazard Categorisation Thresholds : Fill Material: Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Client sample ID

Sub-Matrix: SOIL				Client sample ID		Guideline	Guideline	NEL-EF-BH013	NEL-EF-BH013	NEL-EF-BH021	NEL-EF-BH021	NEL-EF-BH024
				Sampling date/time				_0.5	_1.0	_0.5	_1.5	_0.5
						10-Aug-2018 10:00	10-Aug-2018 10:00	10-Aug-2018 13:30	10-Aug-2018 13:30	10-Aug-2018 15:30		
Compound	Method	LOR	Unit	Lower Limit	Upper Limit	EM1812810-002	EM1812810-003	EM1812810-005	EM1812810-007	EM1812810-012		
EA001: pH in soil using 0.01M CaCl extract												
pH (CaCl2)	EA001	0.1	pH Unit	4	9	7.7	7.7	6.7	7.0	7.1		
EG005T: Total Metals by ICP-AES												
Arsenic	EG005T	5	mg/kg	----	20	6	7	<5	<5	<5		
Cadmium	EG005T	1	mg/kg	----	3	<1	<1	<1	<1	<1		
Copper	EG005T	5	mg/kg	----	100	14	30	10	10	14		
Lead	EG005T	5	mg/kg	----	300	20	29	13	11	15		
Molybdenum	EG005T	2	mg/kg	----	40	<2	<2	<2	<2	<2		
Nickel	EG005T	2	mg/kg	----	60	20	47	15	14	20		
Selenium	EG005T	5	mg/kg	----	10	<5	<5	<5	<5	<5		
Silver	EG005T	2	mg/kg	----	10	<2	<2	<2	<2	<2		
Tin	EG005T	5	mg/kg	----	50	<5	<5	<5	<5	<5		
Zinc	EG005T	5	mg/kg	----	200	34	52	22	48	40		
EG035T: Total Recoverable Mercury by FIMS												
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	<0.1	<0.1	<0.1	<0.1		
EG048: Hexavalent Chromium (Alkaline Digest)												
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	<0.5	<0.5	<0.5	<0.5		
EK026SF: Total CN by Segmented Flow Analyser												
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	<1	<1	<1	<1		
EK040T: Fluoride Total												
Fluoride	EK040T	40	mg/kg	----	450	340	380	310	310	340		
EP066: Polychlorinated Biphenyls (PCB)												
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	<0.1	<0.1	<0.1	<0.1		
EP074A: Monocyclic Aromatic Hydrocarbons												
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	<0.2	<0.2	<0.2	<0.2		
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	<0.2	<0.2	<0.2	<0.2		
EP074I: Volatile Halogenated Compounds												
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	<0.01	<0.01	<0.01	<0.01		
EP075A: Phenolic Compounds (Halogenated)												
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	<0.03	<0.03		
EP075A: Phenolic Compounds (Non-halogenated)												
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	<1	<1	<1	<1		
EP075B: Polynuclear Aromatic Hydrocarbons												



Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material: Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: SOIL

Sub-Matrix: SOIL				Client sample ID		Guideline	Guideline	NEL-EF-BH013	NEL-EF-BH013	NEL-EF-BH021	NEL-EF-BH021	NEL-EF-BH024
				Guideline	Guideline			_0.5	_1.0	_0.5	_1.5	_0.5
Sampling date/time								10-Aug-2018 10:00	10-Aug-2018 10:00	10-Aug-2018 13:30	10-Aug-2018 13:30	10-Aug-2018 15:30
Compound	Method	LOR	Unit	Lower Limit	Upper Limit	EM1812810-002	EM1812810-003	EM1812810-005	EM1812810-007	EM1812810-012		
EP075B: Polynuclear Aromatic Hydrocarbons - Continued												
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	1	<0.5	1.0	<0.5	<0.5	<0.5		
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg	----	20	3.3	8.9	<0.5	<0.5	<0.5		
EP075I: Organochlorine Pesticides												
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	<0.03	<0.03	<0.03	<0.03		
EP080/071: Total Petroleum Hydrocarbons												
C6 - C9 Fraction	EP074-UT	10	mg/kg	----	100	<10	<10	<10	<10	<10		
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg	----	1000	<50	<50	<50	<50	<50		



Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B: Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: SOIL

Sub-Matrix: SOIL				Client sample ID	Guideline	Guideline	NEL-EF-BH024_1.0	----	----	----	----
Sampling date/time				10-Aug-2018 15:30			----	----	----	----	
Compound	Method	LOR	Unit	Lower Limit			Upper Limit	EM1812810-013	-----	-----	-----
EA001: pH in soil using 0.01M CaCl extract											
pH (CaCl2)	EA001	0.1	pH Unit	2	12.5	7.1	----	----	----	----	
EG005T: Total Metals by ICP-AES											
Arsenic	EG005T	5	mg/kg	----	2000	8	----	----	----	----	
Cadmium	EG005T	1	mg/kg	----	400	<1	----	----	----	----	
Copper	EG005T	5	mg/kg	----	20000	20	----	----	----	----	
Lead	EG005T	5	mg/kg	----	6000	15	----	----	----	----	
Molybdenum	EG005T	2	mg/kg	----	4000	<2	----	----	----	----	
Nickel	EG005T	2	mg/kg	----	12000	34	----	----	----	----	
Selenium	EG005T	5	mg/kg	----	200	<5	----	----	----	----	
Silver	EG005T	2	mg/kg	----	720	<2	----	----	----	----	
Zinc	EG005T	5	mg/kg	----	140000	62	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS											
Mercury	EG035T	0.1	mg/kg	----	300	<0.1	----	----	----	----	
EG048: Hexavalent Chromium (Alkaline Digest)											
Hexavalent Chromium	EG048G	0.5	mg/kg	----	2000	<0.5	----	----	----	----	
EK026SF: Total CN by Segmented Flow Analyser											
Total Cyanide	EK026SF	1	mg/kg	----	10000	<1	----	----	----	----	
EK040T: Fluoride Total											
Fluoride	EK040T	40	mg/kg	----	40000	300	----	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons											
Benzene	EP074-UT	0.2	mg/kg	----	16	<0.2	----	----	----	----	
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	240	<0.2	----	----	----	----	
EP074I: Volatile Halogenated Compounds											
Vinyl chloride	EP074-UT	0.02	mg/kg	----	4.8	<0.02	----	----	----	----	
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	11	<0.02	----	----	----	----	
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	50	<0.01	----	----	----	----	
EP075A: Phenolic Compounds (Halogenated)											
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	320	<0.03	----	----	----	----	
EP075A: Phenolic Compounds (Non-halogenated)											
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	2200	<1	----	----	----	----	
EP075B: Polynuclear Aromatic Hydrocarbons											
Benzo(a)pyrene	EP075-EM	0.5	mg/kg	----	20	<0.5	----	----	----	----	



Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category B: Table 2: Soil Hazard Categorisation Thresholds : Category B

Sub-Matrix: SOIL

				Client sample ID	Guideline	Guideline	NEL-EF-BH024 _1.0	----	----	----	----
				Sampling date/time			10-Aug-2018 15:30	----	----	----	----
Compound	Method	LOR	Unit		Lower Limit	Upper Limit	EM1812810-013	-----	-----	-----	-----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg		----	400	<0.5	----	----	----	----
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg		----	4.8	<0.03	----	----	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg		----	4.8	<0.03	----	----	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg		----	50	<0.05	----	----	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg		----	16	<0.03	----	----	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg		----	50	<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg		----	2600	<10	----	----	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg		----	40000	<50	----	----	----	----

Table 2: Soil Hazard Categorisation Thresholds : Category C:

Client sample ID

Sub-Matrix: SOIL				Client sample ID		Guideline	Guideline	NEL-EF-BH024			
				Sampling date/time				_1.0		----	
								10-Aug-2018 15:30		----	
Compound	Method	LOR	Unit	Lower Limit	Upper Limit	EM1812810-013	-----	-----	-----	-----	
EA001: pH in soil using 0.01M CaCl extract											
pH (CaCl2)	EA001	0.1	pH Unit	4	9	7.1	----	----	----	----	
EG005T: Total Metals by ICP-AES											
Arsenic	EG005T	5	mg/kg	----	500	8	----	----	----	----	
Cadmium	EG005T	1	mg/kg	----	100	<1	----	----	----	----	
Copper	EG005T	5	mg/kg	----	5000	20	----	----	----	----	
Lead	EG005T	5	mg/kg	----	1500	15	----	----	----	----	
Molybdenum	EG005T	2	mg/kg	----	1000	<2	----	----	----	----	
Nickel	EG005T	2	mg/kg	----	3000	34	----	----	----	----	
Selenium	EG005T	5	mg/kg	----	50	<5	----	----	----	----	
Silver	EG005T	2	mg/kg	----	180	<2	----	----	----	----	
Tin	EG005T	5	mg/kg	----	500	<5	----	----	----	----	
Zinc	EG005T	5	mg/kg	----	35000	62	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS											
Mercury	EG035T	0.1	mg/kg	----	75	<0.1	----	----	----	----	
EG048: Hexavalent Chromium (Alkaline Digest)											
Hexavalent Chromium	EG048G	0.5	mg/kg	----	500	<0.5	----	----	----	----	
EK026SF: Total CN by Segmented Flow Analyser											
Total Cyanide	EK026SF	1	mg/kg	----	2500	<1	----	----	----	----	
EK040T: Fluoride Total											
Fluoride	EK040T	40	mg/kg	----	10000	300	----	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons											
Benzene	EP074-UT	0.2	mg/kg	----	4	<0.2	----	----	----	----	
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	70	<0.2	----	----	----	----	
EP074I: Volatile Halogenated Compounds											
Vinyl chloride	EP074-UT	0.02	mg/kg	----	1.2	<0.02	----	----	----	----	
Hexachlorobutadiene	EP074-UT	0.02	mg/kg	----	2.8	<0.02	----	----	----	----	
Sum of other chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	10	<0.01	----	----	----	----	
EP075A: Phenolic Compounds (Halogenated)											
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	10	<0.03	----	----	----	----	
EP075A: Phenolic Compounds (Non-halogenated)											
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	560	<1	----	----	----	----	
EP075B: Polynuclear Aromatic Hydrocarbons											



Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Category C: Table 2: Soil Hazard Categorisation Thresholds : Category C

Sub-Matrix: SOIL

				Client sample ID	Guideline	Guideline	NEL-EF-BH024 _1.0	----	----	----	----
				Sampling date/time			10-Aug-2018 15:30	----	----	----	----
Compound	Method	LOR	Unit		Lower Limit	Upper Limit	EM1812810-013	-----	-----	-----	-----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Benzo(a)pyrene	EP075-EM	0.5	mg/kg		----	5	<0.5	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg		----	100	<0.5	----	----	----	----
EP075I: Organochlorine Pesticides											
Heptachlor	EP075-EM	0.03	mg/kg		----	1.2	<0.03	----	----	----	----
Sum of Aldrin + Dieldrin	EP075-EM-SUM	0.03	mg/kg		----	1.2	<0.03	----	----	----	----
Sum of DDD + DDE + DDT	EP075-EM-SUM	0.05	mg/kg		----	50	<0.05	----	----	----	----
Chlordane	EP075-EM-SUM	0.03	mg/kg		----	4	<0.03	----	----	----	----
Sum of other organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg		----	10	<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg		----	650	<10	----	----	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg		----	10000	<50	----	----	----	----

Table 2: Soil Hazard Categorisation Thresholds : Fill Material: Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Client sample ID

Sub-Matrix: SOIL				Client sample ID	Guideline	Guideline	NEL-EF-BH024	----	----	----	----
				Sampling date/time			_1.0				
							10-Aug-2018 15:30				
Compound	Method	LOR	Unit	Lower Limit	Upper Limit	EM1812810-013	-----	-----	-----	-----	
EA001: pH in soil using 0.01M CaCl extract											
pH (CaCl2)	EA001	0.1	pH Unit	4	9	7.1	----	----	----	----	
EG005T: Total Metals by ICP-AES											
Arsenic	EG005T	5	mg/kg	----	20	8	----	----	----	----	
Cadmium	EG005T	1	mg/kg	----	3	<1	----	----	----	----	
Copper	EG005T	5	mg/kg	----	100	20	----	----	----	----	
Lead	EG005T	5	mg/kg	----	300	15	----	----	----	----	
Molybdenum	EG005T	2	mg/kg	----	40	<2	----	----	----	----	
Nickel	EG005T	2	mg/kg	----	60	34	----	----	----	----	
Selenium	EG005T	5	mg/kg	----	10	<5	----	----	----	----	
Silver	EG005T	2	mg/kg	----	10	<2	----	----	----	----	
Tin	EG005T	5	mg/kg	----	50	<5	----	----	----	----	
Zinc	EG005T	5	mg/kg	----	200	62	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS											
Mercury	EG035T	0.1	mg/kg	----	1	<0.1	----	----	----	----	
EG048: Hexavalent Chromium (Alkaline Digest)											
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	<0.5	----	----	----	----	
EK026SF: Total CN by Segmented Flow Analyser											
Total Cyanide	EK026SF	1	mg/kg	----	50	<1	----	----	----	----	
EK040T: Fluoride Total											
Fluoride	EK040T	40	mg/kg	----	450	300	----	----	----	----	
EP066: Polychlorinated Biphenyls (PCB)											
Total Polychlorinated biphenyls	EP066-EM	0.1	mg/kg	----	2	<0.1	----	----	----	----	
EP074A: Monocyclic Aromatic Hydrocarbons											
Benzene	EP074-UT	0.2	mg/kg	----	1	<0.2	----	----	----	----	
Sum of monocyclic aromatic hydrocarbons	EP074-UT-SUM	0.2	mg/kg	----	7	<0.2	----	----	----	----	
EP074I: Volatile Halogenated Compounds											
Sum of volatile chlorinated hydrocarbons	EP074-UT-SUM	0.01	mg/kg	----	1	<0.01	----	----	----	----	
EP075A: Phenolic Compounds (Halogenated)											
Sum of Phenols (halogenated)	EP075-EM-SUM	0.03	mg/kg	----	1	<0.03	----	----	----	----	
EP075A: Phenolic Compounds (Non-halogenated)											
Sum of Phenols (non-halogenated)	EP075-EM-SUM	1	mg/kg	----	60	<1	----	----	----	----	
EP075B: Polynuclear Aromatic Hydrocarbons											



Soil Hazard Categorisation and Management

Table 2: Soil Hazard Categorisation Thresholds : Fill Material: Table 2: Soil Hazard Categorisation Thresholds : Fill Material

Sub-Matrix: SOIL

				Client sample ID	Guideline	Guideline	NEL-EF-BH024_1.0	----	----	----	----
				Sampling date/time			10-Aug-2018 15:30	----	----	----	----
Compound	Method	LOR	Unit		Lower Limit	Upper Limit	EM1812810-013	-----	-----	-----	-----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued											
Benzo(a)pyrene	EP075-EM	0.5	mg/kg		----	1	<0.5	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075-EM-SUM	0.5	mg/kg		----	20	<0.5	----	----	----	----
EP075I: Organochlorine Pesticides											
Sum of organochlorine pesticides	EP075-EM-SUM	0.03	mg/kg		----	1	<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction	EP074-UT	10	mg/kg		----	100	<10	----	----	----	----
C10 - C36 Fraction (sum)	EP071-EM	50	mg/kg		----	1000	<50	----	----	----	----

CHAIN OF CUSTODY RECORD


GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

Page ____ of ____

Job Number		GHD Office		Laboratory:		ALS Springvale		Address:		2 - 4 Westall Rd, Springvale		Lab Contact:		Shirley LeCornu		PLEASE NOTE:	
31/35006/0910		Melbourne		ALS Springvale		2 - 4 Westall Rd, Springvale		Shirley LeCornu		Shirley LeCornu		Shirley LeCornu		Shirley LeCornu		Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sample once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line. Results to be provided in ESDAT compatible format	
Project	North East Link - Contamination	Contact Email	David.Quinn@ghd.com	Quote No./GHD Reference	ME/124/18	Sample ID	Date	Time	Composite Sample	Sample Matrix	Preparation	Analysis Type	Volume	Hold	Analyses Required	Remarks	
NEL-01-02	0.2	10/8/18	10:00	NA	S	-	J	250	X								
"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
NEL-01-02	0.2	13:30															
"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
RS136		15:00															
TB136																	
FB136																	
FB135		9/8/18															
NEL-01-02	0.2	10/8	15:30	S	T	250											
"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	

Environmental Division
Melbourne
Work Order Reference
EM1812810

 Telephone : +61-3-8549 9600

Sampled by:	K. HOLDEN	Date/Time:	10/8	Relinquished by:		Date/Time:	
Received by:	LAB	Date/Time:	10/8	Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Paul Quinn	Date/Time:	10/8/18 15:30				
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)						

CHAIN OF CUSTODY RECORD

Page ____ of ____

GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 9687 8000 Facsimile: 613 9687 8111



Job Number		GHD Office		Laboratory:		ALS Springvale		Address:		2 - 4 Westall Rd, Springvale		Lab Contact:		Shirley LeCornu		Analyses Required		PLEASE NOTE:	
31/35006/0910		Melbourne		Project		North East Link - Contamination		GHD Contact		David Quinn		Contact Email		David.Quinn@ghd.com		Quote No./GHD Reference		ME/124/18	
Standard TAT		Sample ID		Date		Time		Composite Sample		Preservative		Type		Container		Volume (mL)		Remarks	
NEL-EF-BH013-0.2	10/8/18	10:00	NA	S	-	J	1	250	X										
" " " -0.5																			
" " " -1.0																			
NEL-EF-BH021-0.2	13:30																		
" " " -0.5																			
" " " -1.0																			
" " " -1.5																			
RS136	15:00																		
TB136	9:18																		
FB136																			
TB135	9:18																		
NEL-EF-BH024-0.2	10/8	15:30		S	-	J	1	250											
" " " -0.5																			
" " " -1.0																			
" " " -1.5																			

Environmental Division
Melbourne
Work Order Reference
EM1812810

Telephone : + 61-3-9648 9800

Sampled by:	K. HOLDON	Date/Time:	10/8	Relinquished by:		Date/Time:	
Received by:	LAD	Date/Time:	10/8	Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	En (HOLDON)	Date/Time:	10/8/18 15:30	Relinquished by:		Date/Time:	
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)						

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 13 August 2018 10:01 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: ON HOLD-EM1812809 & EM1812810-GHD-31/35006/0910-NORTH EAST LINK CONTAMINATION
Attachments: 10082018184649-0001.pdf; 10082018185012-0001.pdf

Hi Shirley,

Please analyse the following at standard TAT:

EM1812809:

NEL-BH184_0.5m = IWRG621
NEL-BH184_1.0m = IWRG621
NEL-BH217_0.5m = IWRG621
NEL-BH217_1.0m = IWRG621

FB135 = IWRG621 water equivalent
RB135 = IWRG621 water equivalent
TB135 = Volatile TPH/BTEX

EM1812810:

NEL-EF-BH013_0.5m = IWRG621
NEL-EF-BH013_1.0m = IWRG621
NEL-EF-BH021_0.5m = IWRG621
NEL-EF-BH021_1.5m = IWRG621
NEL-EF-BH024_0.5m = IWRG621
NEL-EF-BH024_1.0m = IWRG621

RB136 = IWRG621 water equivalent
TB136 = Volatile TPH/BTEX
FB136 = IWRG621 water equivalent

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

-----Original Message-----

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>

Sent: Monday, 13 August 2018 7:16 AM

To: David Quinn <David.Quinn@ghd.com>; Kory Auch <Kory.Auch@ghd.com>

Subject: FW: ON HOLD-EM1812809 & EM1812810-GHD-31/35006/0910-NORTH EAST LINK CONTAMINATION

QUALITY CONTROL REPORT

Work Order	: EM1812810	Page	: 1 of 19
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 10-Aug-2018
Order number	: ----	Date Analysis Commenced	: 13-Aug-2018
C-O-C number	: ----	Issue Date	: 17-Aug-2018
Sampler	: KH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 14		
No. of samples analysed	: 9		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1869478)									
EM1812725-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	5.0	5.1	1.98	0% - 20%
EM1812771-010	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.8	7.9	1.27	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1869479)									
EM1812810-013	NEL-EF-BH024_1.0	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.1	7.1	0.00	0% - 20%
EM1812827-007	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.9	7.0	1.44	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1869335)									
EM1812809-002	Anonymous	EA055: Moisture Content	----	0.1	%	12.2	16.9	31.9	0% - 50%
EM1812827-001	Anonymous	EA055: Moisture Content	----	0.1	%	11.1	12.7	13.4	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1869445)									
EM1812810-002	NEL-EF-BH013_0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	20	23	16.5	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	<5	21.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	16	16.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	20	18	10.8	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	34	39	12.8	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
EM1812862-001	Anonymous	EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	8	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1869445) - continued									
EM1812862-001	Anonymous	EG005T: Copper	7440-50-8	5	mg/kg	8	8	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	16	0.00	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	36	32	10.7	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1869444)									
EM1812810-002	NEL-EF-BH013_0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1812862-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1869462)									
EM1812725-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1812809-007	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	0.5	0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1869537)									
EM1812725-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1812771-019	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1869068)									
EM1812771-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	200	210	5.94	No Limit
EM1812810-012	NEL-EF-BH024_0.5	EK040T: Fluoride	16984-48-8	40	mg/kg	340	340	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1869055)									
EM1812771-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1812810-003	NEL-EF-BH013_1.0	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1868950)									
EM1812771-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1812810-003	NEL-EF-BH013_1.0	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1868950)									
EM1812771-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1812810-003	NEL-EF-BH013_1.0	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1868950)									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1868950) - continued									
EM1812771-001	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EM1812810-003	NEL-EF-BH013_1.0	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01
EP074-UT: cis-1.2-Dichloroethene	156-59-2			0.01	mg/kg	<0.01	<0.01	0.00	No Limit
EP074-UT: 1.1.1-Trichloroethane	71-55-6			0.01	mg/kg	<0.01	<0.01	0.00	No Limit
EP074-UT: Carbon Tetrachloride	56-23-5			0.01	mg/kg	<0.01	<0.01	0.00	No Limit
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6			0.01	mg/kg	<0.01	<0.01	0.00	No Limit
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1			0.01	mg/kg	<0.01	<0.01	0.00	No Limit
EP074-UT: Vinyl chloride	75-01-4			0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP074-UT: trans-1.2-Dichloroethene	156-60-5			0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP074-UT: Chloroform	67-66-3			0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP074-UT: 1.2-Dichloroethane	107-06-2			0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP074-UT: Trichloroethene	79-01-6			0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP074-UT: Tetrachloroethene	127-18-4			0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5			0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP074-UT: Hexachlorobutadiene	87-68-3			0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP074-UT: Chlorobenzene	108-90-7			0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP074-UT: 1.4-Dichlorobenzene	106-46-7			0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP074-UT: 1.2-Dichlorobenzene	95-50-1			0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP074-UT: 1.1.2-Trichloroethane	79-00-5			0.04	mg/kg	<0.04	<0.04	0.00	No Limit
EP074-UT: Methylene chloride	75-09-2			0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1869053)									
EM1812771-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1869053) - continued									
EM1812771-001	Anonymous	EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		0-2							
EM1812810-003	NEL-EF-BH013_1.0	EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1812771-001	Anonymous	EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		0-2							
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
EM1812810-003	NEL-EF-BH013_1.0	EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
EM1812771-001	Anonymous	EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1869053)									
EM1812771-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	1.8	0.6	100	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	0.6	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	3.4	1.3	88.1	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	3.6	1.4	87.9	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	1.8	0.8	78.3	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	1.8	0.8	78.1	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	3.1	1.5	68.4	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	2.0	0.9	72.7	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	1.0	<0.5	65.0	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	1.2	0.6	66.0	No Limit
EM1812810-003	NEL-EF-BH013_1.0	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	1.0	1.1	13.8	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	1.6	1.6	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	1.6	1.7	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	0.9	1.0	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	0.8	1.0	16.7	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	1.4	1.6	16.5	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	1.0	1.1	13.9	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.6	0.6	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1869053)									
EM1812771-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1869053) - continued									
EM1812771-001	Anonymous	EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EM1812810-003	NEL-EF-BH013_1.0	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1868950)							
EM1812771-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1812810-003	NEL-EF-BH013_1.0	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1869054)									
EM1812771-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	200	<100	69.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	120	<100	21.4	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit

EG020F: Dissolved Metals by ICP-MS (QC Lot: 1873618)



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1873618) - continued									
EM1812809-009	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1873617)									
EM1812782-022	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	0.0002	0.0002	0.00	No Limit
EM1812837-022	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1871589)									
EM1812809-009	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1873976)									
EM1812939-004	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.026	0.025	0.00	No Limit
EM1812939-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	0.035	0.035	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1870929)									
EM1812809-010	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1870675)									
EM1812810-008	RS136	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1870675)									
EM1812810-008	RS136	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1870675)									
EM1812810-008	RS136	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1870675)									
EM1812810-008	RS136	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1870674)									
EM1812753-066	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1812810-008	RS136	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit

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 Work Order : EM1812810
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1870674)									
EM1812753-066	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1812810-008	RS136	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1870674)									
EM1812753-066	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1812810-008	RS136	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			LCS	Low
EG005T: Total Metals by ICP-AES (QCLot: 1869445)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	90.3	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	86.4	85	109
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	88.7	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	87.9	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	103	86	112
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	92.4	82	111
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	97.9	93	109
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.2	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	105	88	116
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	95.0	82	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1869444)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.6	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1869462)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	78.4	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1869537)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	98.1	80	110
EK040T: Fluoride Total (QCLot: 1869068)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	95.2	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1869055)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	107	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1868950)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	97.0	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	102	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	102	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	97.4	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	100	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	100	74	114
EP074H: Naphthalene (QCLot: 1868950)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	105	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1868950)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	110	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	99.4	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1868950) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	94.1	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	104	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	93.6	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	96.7	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	108	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	109	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	98.7	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	102	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	98.3	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	105	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	106	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	103	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	74.7	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	108	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	102	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	101	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	81.0	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1869053)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	89.6	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	89.8	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	90.0	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	89.5	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	90.9	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	90.1	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	86.4	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	91.1	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	92.8	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1869053)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	90.6	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	87.0	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	89.5	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	86.8	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	85.7	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	24 mg/kg	72.8	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	79.9	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	70.2	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	74.7	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	95.4	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1869053)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	89.8	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	92.3	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	91.4	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	90.9	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	93.7	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	93.2	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	99.5	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	100	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	108	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	108	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	4 mg/kg	106	64	134
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	106	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	98.4	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	97.8	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	99.8	55	137
EP075I: Organochlorine Pesticides (QCLot: 1869053)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	91.6	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	90.6	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	94.7	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	92.4	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	97.6	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	90.2	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	91.5	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	93.0	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	97.1	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	94.8	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	124	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	100	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	96.9	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	114	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	81.5	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	100	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	105	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	102	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	101	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	104	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1868950)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	108	69	114

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1873616)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.6	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.3	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.5	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.1	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.1	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	99.8	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	103	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1873618)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	106	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1873617)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	89.8	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1871589)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	103	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1873976)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	98.9	80	110
EK040P: Fluoride by PC Titrator (QCLot: 1870929)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	105	85	112
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1868869)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	89.7	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1870675)								



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1870675) - continued								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	92.5	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1870675)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	75.5	64	139
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	81.0	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	95.6	81	144
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	82.2	73	121
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	87.9	78	120
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	84.7	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	76.4	66	119
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	100	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	86.3	70	120
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	104	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	83.0	75	119
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	92.7	75	112
EP074: 1,1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	106	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	91.1	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1870675)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	92.7	82	114
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	94.6	76	118
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	97.1	82	112
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	90.1	62	119
EP074G: Trihalomethanes (QCLot: 1870675)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	91.8	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1868870)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	63.0	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	62.9	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	65.3	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	72.5	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	80.6	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	80.4	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	86.9	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	85.9	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	88.4	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	87.5	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	82.0	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	81.7	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	81.4	56	126



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1868870) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	78.8	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	77.9	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	76.9	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1868872)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	69.2	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	61.0	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	62.4	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	62.1	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	83.7	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	68.2	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	83.8	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	82.9	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	75.7	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1868872)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	27.0	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	60.6	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	51.3	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	64.3	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	66.0	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	120 µg/L	73.0	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	26.7	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	69.8	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	78.4	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	123	32	135
EP075I: Organochlorine Pesticides (QCLot: 1868872)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	85.9	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	92.0	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	90.4	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	94.5	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	94.5	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	95.8	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	98.3	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	89.2	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	92.8	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1868871)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	87.7	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	92.7	60	133

Method Blank (MB) Report

Spike

Recovery Limits (%)

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report

Sub-Matrix: SOIL				Matrix: WATER			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1869445)							
EM1812810-003	NEL-EF-BH013_1.0	EG005T: Arsenic	7440-38-2	50 mg/kg	94.6	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	91.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	109	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	90.6	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	85.3	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	97.3	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	87.0	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	106	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1869444)							
EM1812810-003	NEL-EF-BH013_1.0	EG035T: Mercury	7439-97-6	5 mg/kg	93.7	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1869462)							



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1869462) - continued							
EM1812771-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	60.0	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1869537)							
EM1812725-005	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	106	77	113
EK040T: Fluoride Total (QCLot: 1869068)							
EM1812771-003	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	104	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1869055)							
EM1812771-010	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	100	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1868950)							
EM1812771-003	Anonymous	EP074-UT: Benzene	71-43-2	2 mg/kg	103	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	104	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1868950)							
EM1812771-003	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	106	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	102	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	111	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1869053)							
EM1812771-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	85.5	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	62.0	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	45.0	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1869053)							
EM1812771-003	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	69.6	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	60.3	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1869053)							
EM1812771-003	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	74.9	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	88.0	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1868950)							
EM1812771-003	Anonymous	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	87.4	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1869054)							
EM1812771-007	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	98.4	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	102	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	96.8	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1868950)							
EM1812771-003	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	84.4	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1869054)							
EM1812771-007	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	98.9	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	101	67	121

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 Work Order : EM1812810
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1869054) - continued							
EM1812771-007	Anonymous	EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	90.9	44	126
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1873616)							
EM1812707-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	96.9	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	89.9	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.3	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.4	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	90.7	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	91.0	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1873617)							
EM1812786-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	81.7	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1871589)							
EM1812809-010	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	107	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1873976)							
EM1812607-004	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	86.4	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1870929)							
EM1812810-008	RS136	EK040P: Fluoride	16984-48-8	5 mg/L	104	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1870675)							
EM1812837-021	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	79.5	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	77.6	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1870675)							
EM1812837-021	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	88.2	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1870674)							
EM1812837-021	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	80.0	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1870674)							
EM1812837-021	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	83.2	44	122
EP080: BTEXN (QCLot: 1870674)							
EM1812837-021	Anonymous	EP080: Benzene	71-43-2	20 µg/L	92.9	68	130
		EP080: Toluene	108-88-3	20 µg/L	86.1	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1812810	Page	: 1 of 13
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 10-Aug-2018
Site	: ----	Issue Date	: 17-Aug-2018
Sampler	: KH	No. of samples received	: 14
Order number	:	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RS136, FB136	----	----	----	14-Aug-2018	10-Aug-2018	4

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,	10-Aug-2018	14-Aug-2018	17-Aug-2018	✔	14-Aug-2018	14-Aug-2018	✔
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)		10-Aug-2018	----	----	----	13-Aug-2018	24-Aug-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)		10-Aug-2018	14-Aug-2018	06-Feb-2019	✓	14-Aug-2018	06-Feb-2019	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)		10-Aug-2018	14-Aug-2018	07-Sep-2018	✓	15-Aug-2018	07-Sep-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)		10-Aug-2018	14-Aug-2018	07-Sep-2018	✓	14-Aug-2018	21-Aug-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)		10-Aug-2018	13-Aug-2018	24-Aug-2018	✓	14-Aug-2018	27-Aug-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)		10-Aug-2018	13-Aug-2018	07-Sep-2018	✓	15-Aug-2018	07-Sep-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)		10-Aug-2018	13-Aug-2018	24-Aug-2018	✓	14-Aug-2018	22-Sep-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)		10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	14-Aug-2018	17-Aug-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)		10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	14-Aug-2018	17-Aug-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)		10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	14-Aug-2018	17-Aug-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)		10-Aug-2018	13-Aug-2018	24-Aug-2018	✓	14-Aug-2018	22-Sep-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)		10-Aug-2018	13-Aug-2018	24-Aug-2018	✓	14-Aug-2018	22-Sep-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)		10-Aug-2018	13-Aug-2018	24-Aug-2018	✓	14-Aug-2018	22-Sep-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)		10-Aug-2018	13-Aug-2018	24-Aug-2018	✓	14-Aug-2018	22-Sep-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)		10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	14-Aug-2018	17-Aug-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)		10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	14-Aug-2018	17-Aug-2018	✓
NEL-EF-BH013_0.5,	NEL-EF-BH013_1.0,							
NEL-EF-BH021_0.5,	NEL-EF-BH021_1.5,							
NEL-EF-BH024_0.5,	NEL-EF-BH024_1.0							

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	FB136	10-Aug-2018	----	----	----	14-Aug-2018	10-Aug-2018	✖
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F)	FB136	10-Aug-2018	----	----	----	15-Aug-2018	06-Feb-2019	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F)	FB136	10-Aug-2018	----	----	----	16-Aug-2018	24-Aug-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F)	FB136	10-Aug-2018	----	----	----	14-Aug-2018	07-Sep-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF)	FB136	10-Aug-2018	----	----	----	15-Aug-2018	24-Aug-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P)	FB136	10-Aug-2018	----	----	----	14-Aug-2018	07-Sep-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066)	FB136	10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	14-Aug-2018	22-Sep-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074)	FB136	10-Aug-2018	15-Aug-2018	24-Aug-2018	✓	15-Aug-2018	24-Aug-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB136	10-Aug-2018	15-Aug-2018	24-Aug-2018	✓	15-Aug-2018	24-Aug-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074)	FB136	10-Aug-2018	15-Aug-2018	24-Aug-2018	✓	15-Aug-2018	24-Aug-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074)	FB136	10-Aug-2018	15-Aug-2018	24-Aug-2018	✓	15-Aug-2018	24-Aug-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM))	FB136	10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	14-Aug-2018	22-Sep-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM)	FB136	10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	15-Aug-2018	22-Sep-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Non-halogenated)							
Amber Glass Bottle - Unpreserved (EP075-EM) RS136, FB136	10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	15-Aug-2018	22-Sep-2018	✓
EP075I: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved (EP075-EM) RS136, FB136	10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	15-Aug-2018	22-Sep-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) RS136, FB136	10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	15-Aug-2018	22-Sep-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RS136, TB136, FB136	10-Aug-2018	15-Aug-2018	24-Aug-2018	✓	15-Aug-2018	24-Aug-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) RS136, FB136	10-Aug-2018	13-Aug-2018	17-Aug-2018	✓	15-Aug-2018	22-Sep-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) RS136, TB136, FB136	10-Aug-2018	15-Aug-2018	24-Aug-2018	✓	15-Aug-2018	24-Aug-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) RS136, TB136, FB136	10-Aug-2018	15-Aug-2018	24-Aug-2018	✓	15-Aug-2018	24-Aug-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: **✖** = Quality Control frequency not within specification ; **✓** = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.



Preparation Methods	Method	Matrix	Method Descriptions
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1814388**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060202**
Order number : **----**
C-O-C number : **----**
Sampler : **KORY AUCH**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **7**
No. of samples analysed : **6**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 07-Sep-2018 16:45
Date Analysis Commenced : 10-Sep-2018
Issue Date : 14-Sep-2018 16:20



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Team Leader - Asbestos	Melbourne Asbestos, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- pH analysis is done under non-stirring condition.
- EG005T: EM1814388_003 Poor matrix spike recovery for Copper, Nickel and Zinc due to sample matrix. Confirmed by re-extraction and re-analysis.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH119_1.0	NEL-BH119_1.8	NEL-BH119_2.5	----	----
Client sampling date / time					07-Sep-2018 08:30	07-Sep-2018 09:15	07-Sep-2018 09:30	----	----
Compound	CAS Number	LOR	Unit		EM1814388-001	EM1814388-003	EM1814388-004	-----	-----
				Result	Result	Result	Result	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		6.3	6.3	6.5	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		9.5	9.4	15.2	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	Yes	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres		----	No	----	----	----
Asbestos Type	1332-21-4	-	--		----	Ch + Am + Cr	----	----	----
Sample weight (dry)	----	0.01	g		----	31.6	----	----	----
APPROVED IDENTIFIER:	----	-	--		----	E.DAOS	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	20	<5	----	----
Cadmium	7440-43-9	1	mg/kg		11	13	<1	----	----
Copper	7440-50-8	5	mg/kg		45	82	11	----	----
Lead	7439-92-1	5	mg/kg		74	66	14	----	----
Molybdenum	7439-98-7	2	mg/kg		<2	5	<2	----	----
Nickel	7440-02-0	2	mg/kg		62	112	14	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	----	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	----	----
Tin	7440-31-5	5	mg/kg		121	31	<5	----	----
Zinc	7440-66-6	5	mg/kg		126	148	18	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		1.0	0.4	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	<1	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		170	120	320	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH119_1.0	NEL-BH119_1.8	NEL-BH119_2.5	----	----
Client sampling date / time					07-Sep-2018 08:30	07-Sep-2018 09:15	07-Sep-2018 09:30	----	----
Compound	CAS Number	LOR	Unit		EM1814388-001	EM1814388-003	EM1814388-004	-----	-----
				Result	Result	Result		----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
meta- & para-Xylene	108-38-3	106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Styrene	100-42-5		0.5	mg/kg	<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6		0.5	mg/kg	<0.5	<0.5	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----		0.2	mg/kg	<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----		0.5	mg/kg	<0.5	<0.5	<0.5	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3		1	mg/kg	<1	<1	<1	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4		0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1-Dichloroethene	75-35-4		0.01	mg/kg	<0.01	<0.01	<0.01	----	----
Methylene chloride	75-09-2		0.4	mg/kg	<0.4	<0.4	<0.4	----	----
trans-1,2-Dichloroethene	156-60-5		0.02	mg/kg	<0.02	<0.02	<0.02	----	----
cis-1,2-Dichloroethene	156-59-2		0.01	mg/kg	<0.01	<0.01	<0.01	----	----
Chloroform	67-66-3		0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1,1-Trichloroethane	71-55-6		0.01	mg/kg	<0.01	<0.01	<0.01	----	----
Carbon Tetrachloride	56-23-5		0.01	mg/kg	<0.01	<0.01	<0.01	----	----
1,2-Dichloroethane	107-06-2		0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Trichloroethene	79-01-6		0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1,2-Trichloroethane	79-00-5		0.04	mg/kg	<0.04	<0.04	<0.04	----	----
Tetrachloroethene	127-18-4		0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,1,1,2-Tetrachloroethane	630-20-6		0.01	mg/kg	<0.01	<0.01	<0.01	----	----
1,1,2,2-Tetrachloroethane	79-34-5		0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Hexachlorobutadiene	87-68-3		0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Chlorobenzene	108-90-7		0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,4-Dichlorobenzene	106-46-7		0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,2-Dichlorobenzene	95-50-1		0.02	mg/kg	<0.02	<0.02	<0.02	----	----
1,2,4-Trichlorobenzene	120-82-1		0.01	mg/kg	<0.01	<0.01	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----		0.01	mg/kg	<0.01	<0.01	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----		0.01	mg/kg	<0.01	<0.01	<0.01	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8		0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,4-Dichlorophenol	120-83-2		0.03	mg/kg	<0.03	<0.03	<0.03	----	----
2,6-Dichlorophenol	87-65-0		0.03	mg/kg	<0.03	<0.03	<0.03	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH119_1.0	NEL-BH119_1.8	NEL-BH119_2.5	----	----
Client sampling date / time					07-Sep-2018 08:30	07-Sep-2018 09:15	07-Sep-2018 09:30	----	----
Compound	CAS Number	LOR	Unit		EM1814388-001	EM1814388-003	EM1814388-004	-----	-----
					Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	<1	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	<1	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	<5	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	<5	----	----
Dinoseb	88-85-7	5	mg/kg		<5	<5	<5	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH119_1.0	NEL-BH119_1.8	NEL-BH119_2.5	----	----
Client sampling date / time					07-Sep-2018 08:30	07-Sep-2018 09:15	07-Sep-2018 09:30	----	----
Compound	CAS Number	LOR	Unit		EM1814388-001	EM1814388-003	EM1814388-004	-----	-----
				Result	Result	Result		----	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	<0.03	<0.03	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH119_1.0	NEL-BH119_1.8	NEL-BH119_2.5	----	----
Client sampling date / time					07-Sep-2018 08:30	07-Sep-2018 09:15	07-Sep-2018 09:30	----	----
Compound	CAS Number	LOR	Unit		EM1814388-001	EM1814388-003	EM1814388-004	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
C15 - C28 Fraction	----	100	mg/kg		120	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		180	170	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		300	170	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		250	180	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		110	110	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		360	290	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		105	110	111	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		81.8	83.1	79.0	----	----
Toluene-D8	2037-26-5	0.1	%		78.9	81.0	75.1	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		82.9	85.2	83.3	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		92.0	92.8	98.6	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		74.1	76.6	79.0	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%		85.5	90.2	83.5	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		96.7	95.5	98.1	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		92.9	91.8	93.1	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		101	100	104	----	----
Anthracene-d10	1719-06-8	0.025	%		100	98.4	105	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		100	99.0	104	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB309	FB309	TB309	----	----
Client sampling date / time				07-Sep-2018 10:00	07-Sep-2018 10:00	07-Sep-2018 10:00	----	----
Compound	CAS Number	LOR	Unit	EM1814388-005	EM1814388-006	EM1814388-007	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.98	6.20	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050T: Total Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB309	FB309	TB309	----	----
Client sampling date / time					07-Sep-2018 10:00	07-Sep-2018 10:00	07-Sep-2018 10:00	----	----
Compound	CAS Number	LOR	Unit		EM1814388-005	EM1814388-006	EM1814388-007	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2,4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB309	FB309	TB309	----	----
Client sampling date / time				07-Sep-2018 10:00	07-Sep-2018 10:00	07-Sep-2018 10:00	----	----
Compound	CAS Number	LOR	Unit	EM1814388-005	EM1814388-006	EM1814388-007	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB309	FB309	TB309	----	----
Client sampling date / time					07-Sep-2018 10:00	07-Sep-2018 10:00	07-Sep-2018 10:00	----	----
Compound	CAS Number	LOR	Unit		EM1814388-005	EM1814388-006	EM1814388-007	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		82.6	75.5	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		89.9	87.2	----	----	----
Toluene-D8	2037-26-5	5	%		85.8	77.9	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		105	101	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		22.1	27.9	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		48.6	66.4	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		38.1	57.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		52.6	78.6	----	----	----
Anthracene-d10	1719-06-8	1.0	%		52.5	80.9	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		53.0	79.9	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB309	FB309	TB309	----	----
Client sampling date / time					07-Sep-2018 10:00	07-Sep-2018 10:00	07-Sep-2018 10:00	----	----
Compound	CAS Number	LOR	Unit		EM1814388-005	EM1814388-006	EM1814388-007	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		31.7	36.4	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		74.2	76.3	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		78.1	80.1	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		87.4	92.3	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		86.3	87.2	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		89.2	91.2	----	----	----
Anthracene-d10	1719-06-8	0.25	%		89.7	91.0	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		89.8	93.1	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		92.8	105	91.2	----	----
Toluene-D8	2037-26-5	2	%		81.7	90.4	77.6	----	----
4-Bromofluorobenzene	460-00-4	2	%		95.6	107	92.6	----	----

Analytical Results

Descriptive Results

Sub-Matrix: SOIL		
Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	NEL-BH119_1.8 - 07-Sep-2018 09:15	Brown soil with rock, organic, and synthetic mineral fibres plus two asbestos containing material fragments approx 14 x 12 x 5mm.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136

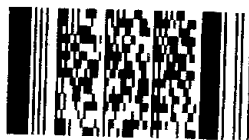


Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued			
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



Page 1 of 1

Job Number 3135006-0202	GHD Office Melbourne	Laboratory: ALS Springvale	PLEASE NOTE: Sign white copy on receipt and release of samples. Samples are to be delivered to the Laboratory Address. On receipt of samples, the laboratory contact to sign white copy and fax/email to GHD Contact. On completion of analyses please return white copy with results. Pink copy is returned to the sampler once the courier has signed for the samples. E-mail results to the GHD Contact with the GHD Job Number in the e-mail subject line.																										
Project North East Link - Contamination Assessment	- FREEMAN GOLF COURSE	Address: 2 - 4 Westall Rd, Springvale	Lab Contact: Shirley LeCornu																										
GHD Contact Kory Auch	Contact Email kory.auch@ghd.com																												
Standard TAT	Quote No./GHD Reference MEL/124/18																												
Sample ID	Date	Time	Composite Sample	Sample Mark Substrate: A-M Container: B-N	Preservative	Type Vial: 16 glass bottle P: plastic bottle	Number	Volume (mL)	HOLD	IWRG621	Volatile TPH/BTEX	Asbestos elemental/pneumo																	
NEL-BH119-1.0	7/9/2018	08:30		S		151b				X																			
↓ - 1.5	7/9/2018	09:00		↓		151b			X																				
↓ - 1.8	7/9/2018	09:15		↓		152b				X		X																	
NEL-BH119-2.5	7/9/2018	09:30		S		151b				X																			
RB309	7/9/2018	10:00		W		2v2g4p				X																			
FB309	7/9/2018	10:00		W		2v2g4p				X																			
TB309	7/9/2018	10:00		W		2v					X																		
															Environmental Division Melbourne Work Order Reference EM1814388														
																													
															Telephone : + 61-3-8549 9600														

Sampled by:	Kory Avel <i>TS</i>	Date/Time:	7/9/2018 @ 13:00	Relinquished by:	Kory Avel <i>TS</i>	Date/Time:	7/9/2018 @ 13:55
Received by:		Date/Time:		Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Ru (Aves)	Date/Time:	7/9/18 @ 16:45				
Remarks:	Please CC reports and correspondence to Mark Davidson (mark.davidson@ghd.com) or Joseph Hixon (joseph.hixon@ghd.com)						

**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1814388**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060202	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: KORY AUCH		

Dates

Date Samples Received	: 07-Sep-2018 16:45	Issue Date	: 08-Sep-2018
Client Requested Due Date	: 14-Sep-2018	Scheduled Reporting Date	: 14-Sep-2018

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.2°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 7 / 6

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EA200 Asbestos Identification in Soils - SOIL - P-16	WRG 621
EM1814388-001	07-Sep-2018 08:30	NEL-BH119_1.0		✓		✓
EM1814388-002	07-Sep-2018 09:00	NEL-BH119_1.5	✓			
EM1814388-003	07-Sep-2018 09:15	NEL-BH119_1.8		✓	✓	✓
EM1814388-004	07-Sep-2018 09:30	NEL-BH119_2.5		✓		✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG050T Total Hexavalent Chromium	WATER - EK040-P Fluoride (PCT)	WATER - W-07 TRH/BTEX/PAH
EM1814388-005	07-Sep-2018 10:00	RB309	✓	✓	✓
EM1814388-006	07-Sep-2018 10:00	FB309	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PCT)	WATER - EG020T Total Metals by ICP/MS (including digestion)	WATER - EG035T Total Mercury	WATER - EK026SF Total Cyanide by Segmented Flow Analyser	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP074 (water) Volatile Organic Compounds	WATER - EP075-EM SVOC - Waste Classification
EM1814388-005	07-Sep-2018 10:00	RB309	✓	✓	✓	✓	✓	✓	✓
EM1814388-006	07-Sep-2018 10:00	FB309	✓	✓	✓	✓	✓	✓	✓

QUALITY CONTROL REPORT

Work Order	: EM1814388	Page	: 1 of 20
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060202	Date Samples Received	: 07-Sep-2018
Order number	:	Date Analysis Commenced	: 10-Sep-2018
C-O-C number	: ----	Issue Date	: 14-Sep-2018
Sampler	: KORY AUCH		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 7		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Team Leader - Asbestos	Melbourne Asbestos, Springvale, VIC
Eric Chau	Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1924359)									
EM1814177-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	4.1	4.1	0.00	0% - 20%
EM1814315-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.0	6.2	3.28	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1922494)									
EM1814374-024	Anonymous	EA055: Moisture Content	----	0.1	%	8.8	8.2	8.17	No Limit
EM1814389-005	Anonymous	EA055: Moisture Content	----	0.1	%	15.6	16.0	2.66	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1923430)									
EM1814388-001	NEL-BH119_1.0	EG005T: Cadmium	7440-43-9	1	mg/kg	11	11	0.00	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	62	63	1.63	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	45	32	34.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	74	78	4.56	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	121	121	0.00	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	126	128	1.55	0% - 20%
EM1814393-009	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	8	18.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	15	7.11	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1923430) - continued									
EM1814393-009	Anonymous	EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	40	42	4.86	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1923431)									
EM1814388-001	NEL-BH119_1.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.0	0.8	21.2	0% - 50%
EM1814393-009	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1924377)									
EM1814374-024	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1814393-010	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1925164)									
EM1814369-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	1	1	0.00	No Limit
EM1814374-009	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1923096)									
EM1814337-003	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	40	50	0.00	No Limit
EM1814392-010	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	110	120	12.8	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1922350)									
EM1814337-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1814393-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1922387)									
EM1814369-001	Anonymous	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1814393-015	Anonymous	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1922387)									
EM1814369-001	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1814393-015	Anonymous	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1922387)									
EM1814369-001	Anonymous	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1922387) - continued									
EM1814369-001	Anonymous	EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EM1814393-015	Anonymous	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
		EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1922348)							
EM1814337-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1922348) - continued									
EM1814337-003	Anonymous	EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1814393-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1922348)									
EM1814337-003	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
EM1814393-001	Anonymous	EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
EM1814337-003	Anonymous	EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1922348)									
EM1814337-003	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1922348) - continued									
EM1814337-003	Anonymous	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1814393-001	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		
EP075I: Organochlorine Pesticides (QC Lot: 1922348)									
EM1814337-003	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP075I: Organochlorine Pesticides (QC Lot: 1922348) - continued											
EM1814337-003	Anonymous	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EM1814393-001	Anonymous	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
		EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
EM1814393-001	Anonymous	EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit		
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EM1814393-001	Anonymous	EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
		EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1922349)									
		EM1814337-003	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
				EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
				EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EM1814393-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
				EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
				EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1922387)									
		EM1814369-001	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1922387) - continued									
EM1814393-015	Anonymous	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1922349)									
EM1814337-003	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1814393-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1922387)									
EM1814369-001	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EM1814393-015	Anonymous	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1924274)									
EM1814360-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.80	7.74	0.772	0% - 20%
EM1814290-008	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.65	7.62	0.393	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 1926271)									
EM1814212-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	0.002	0.001	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 1926273)									
EM1814355-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Tin	7440-31-5	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.006	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM1814506-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.008	0.008	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.022	0.021	5.49	0% - 20%
		EG020A-T: Tin	7440-31-5	0.001	mg/L	0.002	0.001	76.4	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.008	0.008	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1924426)									
EM1814388-005	RB309	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1814459-011	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050T: Total Hexavalent Chromium (QC Lot: 1923151)									
EM1814257-001	Anonymous	EG050T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1922965)									
EM1814331-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1814331-012	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 1924273)									
EM1814290-008	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.3	0.3	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1924092)									
EM1814361-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1924092)									
EM1814361-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1924092)									
EM1814361-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1924092)									
EM1814361-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1922419)									
EM1814385-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1924091)									

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 Work Order : EM1814388
 Client : GHD PTY LTD
 Project : 31350060202



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1924091) - continued									
EM1814388-006	FB309	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1814361-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	60	50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1922419)									
EM1814385-001	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1924091)									
EM1814388-006	FB309	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1814361-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	110	100	0.00	No Limit
EP080: BTEXN (QC Lot: 1924091)									
EM1814388-006	FB309	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1814361-001	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	19	19	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	4	4	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit		



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1923430)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	88.9	78	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	83.4	76	108
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	90.7	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	94.1	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	102	78	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	89.7	80	109
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	96.7	92	110
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.1	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	104	78	117
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	88.6	79	110
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1923431)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	83.3	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1924377)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	79.2	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1925164)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	91.5	80	107
EK040T: Fluoride Total (QCLot: 1923096)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	92.0	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1922350)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	2 mg/kg	87.5	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1922387)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	82.2	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	83.5	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	80.1	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	80.8	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	82.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	81.8	74	114
EP074H: Naphthalene (QCLot: 1922387)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	82.0	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1922387)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	80.9	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	80.0	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1922387) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	85.0	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	80.8	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	80.7	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	81.4	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	81.3	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	74.2	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	88.5	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	80.8	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	85.7	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	83.3	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	77.3	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.3	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	73.8	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	81.9	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	78.4	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	82.0	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	78.5	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1922348)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	89.2	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	118	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	92.2	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	117	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	95.6	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	115	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	94.3	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	87.7	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	119	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1922348)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	115	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	100	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	104	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	117	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	87.4	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	24 mg/kg	97.7	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	107	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	104	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	97.3	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	81.1	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1922348)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	94.8	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	83.7	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	94.8	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	95.8	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	96.5	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	95.4	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	98.5	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	97.4	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	99.9	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	101	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	99.8	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	90.7	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	109	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	110	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	108	55	137
EP075I: Organochlorine Pesticides (QCLot: 1922348)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	97.0	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	93.8	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	100	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	98.3	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	99.4	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	93.7	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	95.7	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	97.1	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	96.4	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	96.9	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	97.0	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	97.9	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	98.4	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	104	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	115	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	99.3	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	99.7	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	99.4	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	97.1	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	95.7	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1922349)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	100	73	134



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1922349) - continued								
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	107	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	102	77	116
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1922387)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	81.6	69	114
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1922349)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	102	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	107	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	85.6	68	124
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1922387)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	81.5	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1926271)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	107	78	129
EG020T: Total Metals by ICP-MS (QCLot: 1926273)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	107	90	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	106	86	111
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	104	87	108
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	88	109
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	108	88	114
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	107	87	111
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.4	85	113
EG020A-T: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	106	88	113
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	104	87	113
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1924426)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	101	81	114
EG050T: Total Hexavalent Chromium (QCLot: 1923151)								
EG050T: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	98.4	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1922965)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	92.0	75	109
EK040P: Fluoride by PC Titrator (QCLot: 1924273)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	91.0	87	117
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1922421)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	67.7	54	132



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1924092)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	98.1	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1924092)								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	83.1	64	139
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	89.0	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	101	81	144
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	93.8	73	121
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	97.7	78	120
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	92.5	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	86.9	66	119
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	101	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	92.4	70	120
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	105	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	93.7	75	119
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	98.2	75	112
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	111	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	83.8	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1924092)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	99.3	82	114
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	95.9	76	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	96.2	82	112
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	85.6	62	119
EP074G: Trihalomethanes (QCLot: 1924092)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	97.6	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1922420)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	62.2	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	68.9	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	67.7	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	73.1	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	79.2	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	82.9	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	91.1	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	90.6	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	92.9	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	92.8	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	98.5	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	98.4	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	99.2	56	126



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1922420) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	97.2	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	96.9	53	125
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	97.2	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1922399)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	85.0	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	89.0	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	91.0	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	86.7	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	95.0	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	92.4	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	94.4	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	97.6	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	100	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1922399)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	39.5	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	75.2	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	66.4	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	92.2	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	74.1	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	120 µg/L	105	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	38.0	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	98.9	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	104	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	119	32	135
EP075I: Organochlorine Pesticides (QCLot: 1922399)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	98.2	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	101	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	99.8	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	101	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	103	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	104	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	107	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	97.0	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	99.4	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1922419)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	88.2	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	88.6	60	133



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1922419) - continued								
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	88.2	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1924091)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	78.8	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1922419)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6292 µg/L	91.2	58	122
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	22143 µg/L	88.1	56	132
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1677 µg/L	87.7	58	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1924091)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	79.4	66	123
EP080: BTEXN (QCLot: 1924091)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	80.8	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	81.0	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	80.1	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	81.7	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	85.5	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	83.4	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1923430)							
EM1814388-003	NEL-BH119_1.8	EG005T: Nickel	7440-02-0	50 mg/kg	# 150	78	120
		EG005T: Zinc	7440-66-6	50 mg/kg	# 160	74	128
EM1814388-003	NEL-BH119_1.8	EG005T: Arsenic	7440-38-2	50 mg/kg	102	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	103	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	# Not Determined	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	88.8	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	97.6	79	117
		EG005T: Selenium	7782-49-2	50 mg/kg	82.0	71	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1923431)							
EM1814388-003	NEL-BH119_1.8	EG035T: Mercury	7439-97-6	5 mg/kg	78.4	76	116

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1924377)							
EM1814388-001	NEL-BH119_1.0	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	65.8	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1925164)							
EM1814374-001	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	90.6	77	113
EK040T: Fluoride Total (QCLot: 1923096)							
EM1814337-004	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	82.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1922350)							
EM1814352-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	2 mg/kg	65.2	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1922387)							
EM1814388-001	NEL-BH119_1.0	EP074-UT: Benzene	71-43-2	2 mg/kg	58.2	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	68.8	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1922387)							
EM1814388-001	NEL-BH119_1.0	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	46.7	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	60.2	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	79.0	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1922348)							
EM1814337-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	89.4	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	81.9	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	64.0	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1922348)							
EM1814337-004	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	91.8	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	72.2	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1922348)							
EM1814337-004	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	80.6	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	94.8	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1922349)							
EM1814337-005	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	118	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	121	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	116	64	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1922387)							
EM1814388-001	NEL-BH119_1.0	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	73.7	43	111
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1922349)							
EM1814337-005	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	118	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	121	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	113	44	126
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1922387)							

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1922387) - continued							
EM1814388-001	NEL-BH119_1.0	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	73.8	42	106
Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1926273)							
EM1814355-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	90.9	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	94.8	75	129
		EG020A-T: Copper	7440-50-8	1 mg/L	90.0	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	89.7	83	121
		EG020A-T: Nickel	7440-02-0	1 mg/L	96.0	80	118
		EG020A-T: Zinc	7440-66-6	1 mg/L	90.9	74	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1924426)							
EM1814388-006	FB309	EG035T: Mercury	7439-97-6	0.01 mg/L	101	70	130
EG050T: Total Hexavalent Chromium (QCLot: 1923151)							
EM1814388-005	RB309	EG050T: Hexavalent Chromium	18540-29-9	0.5 mg/L	98.0	80	120
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1922965)							
EM1814331-002	Anonymous	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	91.2	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1924273)							
EM1814290-007	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	99.8	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1924092)							
EM1814361-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	65.7	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	75.0	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1924092)							
EM1814361-002	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	89.1	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1922419)							
EM1814385-001	Anonymous	EP071: C10 - C14 Fraction	----	4331 µg/L	78.0	50	130
		EP071: C15 - C28 Fraction	----	16952 µg/L	78.7	54	136
		EP071: C29 - C36 Fraction	----	8695 µg/L	78.2	50	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1924091)							
EM1814361-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	58.2	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1922419)							
EM1814385-001	Anonymous	EP071: >C10 - C16 Fraction	----	6292 µg/L	80.2	50	128
		EP071: >C16 - C34 Fraction	----	22143 µg/L	78.2	50	150
		EP071: >C34 - C40 Fraction	----	1677 µg/L	78.0	51	159
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1924091)							

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Work Order : EM1814388
Client : GHD PTY LTD
Project : 31350060202



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1924091) - continued							
EM1814361-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	57.8	44	122
EP080: BTEXN (QCLot: 1924091)							
EM1814361-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	79.0	68	130
		EP080: Toluene	108-88-3	20 µg/L	76.4	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1814388**

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Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Project : **31350060202**
Site : **----**
Sampler : **KORY AUCH**
Order number :

Laboratory : **Environmental Division Melbourne**
Telephone : **+61-3-8549 9630**
Date Samples Received : **07-Sep-2018**
Issue Date : **14-Sep-2018**
No. of samples received : **7**
No. of samples analysed : **6**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EM1814388--003	NEL-BH119_1.8	Nickel	7440-02-0	150 %	78-120%	Recovery greater than upper data quality objective
EG005T: Total Metals by ICP-AES	EM1814388--003	NEL-BH119_1.8	Zinc	7440-66-6	160 %	74-128%	Recovery greater than upper data quality objective

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural RB309,	FB309	----	----	----	11-Sep-2018	07-Sep-2018	4

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	1	15	6.67	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	11-Sep-2018	14-Sep-2018	✓	11-Sep-2018	11-Sep-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	----	----	----	10-Sep-2018	21-Sep-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) NEL-BH119_1.8		07-Sep-2018	----	----	----	10-Sep-2018	06-Mar-2019	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	06-Mar-2019	✓	11-Sep-2018	06-Mar-2019	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	05-Oct-2018	✓	11-Sep-2018	05-Oct-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	11-Sep-2018	05-Oct-2018	✓	11-Sep-2018	18-Sep-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	11-Sep-2018	21-Sep-2018	✓	12-Sep-2018	25-Sep-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	05-Oct-2018	✓	12-Sep-2018	05-Oct-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	21-Sep-2018	✓	10-Sep-2018	20-Oct-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	14-Sep-2018	✓	10-Sep-2018	14-Sep-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	14-Sep-2018	✓	10-Sep-2018	14-Sep-2018	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	14-Sep-2018	✓	10-Sep-2018	14-Sep-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	21-Sep-2018	✓	10-Sep-2018	20-Oct-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	21-Sep-2018	✓	10-Sep-2018	20-Oct-2018	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	21-Sep-2018	✓	10-Sep-2018	20-Oct-2018	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	21-Sep-2018	✓	10-Sep-2018	20-Oct-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	14-Sep-2018	✓	10-Sep-2018	14-Sep-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH119_1.0, NEL-BH119_2.5	NEL-BH119_1.8, NEL-BH119_2.5	07-Sep-2018	10-Sep-2018	14-Sep-2018	✓	10-Sep-2018	14-Sep-2018	✓

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) RB309, FB309		07-Sep-2018	----	----	----	11-Sep-2018	07-Sep-2018	✖
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-T) RB309, FB309		07-Sep-2018	12-Sep-2018	06-Mar-2019	✔	12-Sep-2018	06-Mar-2019	✔



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) RB309,	FB309	07-Sep-2018	----	----	----	12-Sep-2018	05-Oct-2018	✓
EG050T: Total Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050T) RB309,	FB309	07-Sep-2018	----	----	----	10-Sep-2018	05-Oct-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Opaque plastic bottle - NaOH (EK026SF) RB309,	FB309	07-Sep-2018	----	----	----	10-Sep-2018	21-Sep-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB309,	FB309	07-Sep-2018	----	----	----	11-Sep-2018	05-Oct-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB309,	FB309	07-Sep-2018	11-Sep-2018	14-Sep-2018	✓	12-Sep-2018	21-Oct-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB309,	FB309	07-Sep-2018	11-Sep-2018	21-Sep-2018	✓	12-Sep-2018	21-Sep-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB309,	FB309	07-Sep-2018	11-Sep-2018	21-Sep-2018	✓	12-Sep-2018	21-Sep-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB309,	FB309	07-Sep-2018	11-Sep-2018	21-Sep-2018	✓	12-Sep-2018	21-Sep-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB309,	FB309	07-Sep-2018	11-Sep-2018	21-Sep-2018	✓	12-Sep-2018	21-Sep-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB309,	FB309	07-Sep-2018	11-Sep-2018	14-Sep-2018	✓	12-Sep-2018	21-Oct-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB309,	FB309	07-Sep-2018	10-Sep-2018	14-Sep-2018	✓	11-Sep-2018	20-Oct-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB309,	FB309	07-Sep-2018	10-Sep-2018	14-Sep-2018	✓	11-Sep-2018	20-Oct-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB309,	FB309	07-Sep-2018	10-Sep-2018	14-Sep-2018	✓	11-Sep-2018	20-Oct-2018	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
RB309,	FB309	07-Sep-2018	11-Sep-2018	14-Sep-2018	✓	12-Sep-2018	21-Oct-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RB309,	FB309,	07-Sep-2018	11-Sep-2018	21-Sep-2018	✓	12-Sep-2018	21-Sep-2018	✓
TB309								
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
RB309,	FB309	07-Sep-2018	11-Sep-2018	14-Sep-2018	✓	12-Sep-2018	21-Oct-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RB309,	FB309,	07-Sep-2018	11-Sep-2018	21-Sep-2018	✓	12-Sep-2018	21-Sep-2018	✓
TB309								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
RB309,	FB309,	07-Sep-2018	11-Sep-2018	21-Sep-2018	✓	12-Sep-2018	21-Sep-2018	✓
TB309								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Fluoride by PC Titrator	EK040P	1	10	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Total	EG050T	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	3	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	9	22.22	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Fluoride by PC Titrator	EK040P	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Total	EG050T	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Fluoride by PC Titrator	EK040P	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Total	EG050T	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Fluoride by PC Titrator	EK040P	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Total	EG050T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	3	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Total	EG050T	WATER	In house: Referenced to APHA 3500 Cr-B. Hexavalent chromium is determined directly on water sample as received by pH adjustment and colour development using dephenylcarbazine. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.

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Work Order : EM1814388
Client : GHD PTY LTD
Project : 31350060202



Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1814744**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350061101**
Order number : **----**
C-O-C number : **----**
Sampler : **AT**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **7**
No. of samples analysed : **7**

Page : 1 of 14
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 13-Sep-2018 11:20
Date Analysis Commenced : 17-Sep-2018
Issue Date : 21-Sep-2018 12:46



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Team Leader - Asbestos	Melbourne Asbestos, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075-EM/EP066-EM: Particular sample (EM-1814744-005) required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.
- pH analysis is done under non-stirring condition.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH221_0.5	NEL-BH221_1.0	NEL-BH221_3.0	NEL-BH118_0.5	NEL-BH118_0.8
Client sampling date / time				11-Sep-2018 09:30	11-Sep-2018 09:45	11-Sep-2018 10:00	12-Sep-2018 08:45	12-Sep-2018 09:00	
Compound	CAS Number	LOR	Unit	EM1814744-001	EM1814744-002	EM1814744-003	EM1814744-005	EM1814744-006	
				Result	Result	Result	Result	Result	
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	8.2	8.0	8.0	6.6	6.9	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	6.2	8.1	17.2	6.2	7.3	
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	----	----	No	
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	----	----	No	
Asbestos Type	1332-21-4	-	--	----	-	----	----	-	
Sample weight (dry)	----	0.01	g	----	46.1	----	----	51.1	
APPROVED IDENTIFIER:	----	-	--	----	E.DAOS	----	----	E.DAOS	
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	5	8	<5	15	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Copper	7440-50-8	5	mg/kg	11	22	12	48	7	
Lead	7439-92-1	5	mg/kg	30	248	16	291	16	
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2	
Nickel	7440-02-0	2	mg/kg	15	23	15	14	8	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2	
Tin	7440-31-5	5	mg/kg	<5	11	<5	6	<5	
Zinc	7440-66-6	5	mg/kg	28	125	25	168	8	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	<1	<1	<1	<1	<1	
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	260	360	400	200	280	
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.1	
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH221_0.5	NEL-BH221_1.0	NEL-BH221_3.0	NEL-BH118_0.5	NEL-BH118_0.8
Client sampling date / time					11-Sep-2018 09:30	11-Sep-2018 09:45	11-Sep-2018 10:00	12-Sep-2018 08:45	12-Sep-2018 09:00
Compound	CAS Number	LOR	Unit		EM1814744-001	EM1814744-002	EM1814744-003	EM1814744-005	EM1814744-006
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	<0.4	<0.4	<0.4	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Chloroform	67-66-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	<0.01	<0.01	<0.01	<0.01
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH221_0.5	NEL-BH221_1.0	NEL-BH221_3.0	NEL-BH118_0.5	NEL-BH118_0.8
Client sampling date / time					11-Sep-2018 09:30	11-Sep-2018 09:45	11-Sep-2018 10:00	12-Sep-2018 08:45	12-Sep-2018 09:00
Compound	CAS Number	LOR	Unit		EM1814744-001	EM1814744-002	EM1814744-003	EM1814744-005	EM1814744-006
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.14	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.14	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.29	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		<1	<1	<1	<1	<1
2-Methylphenol	95-48-7	1	mg/kg		<1	<1	<1	<1	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	1	mg/kg		<1	<1	<1	<1	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg		<1	<1	<1	<1	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg		<5	<5	<5	<12	<5
4-Nitrophenol	100-02-7	5	mg/kg		<5	<5	<5	<6	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg		<5	<5	<5	<6	<5
Dinoseb	88-85-7	5	mg/kg		<5	<5	<5	<6	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg		<5	<5	<5	<6	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		<1	<1	<1	<1	<1
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	1.0	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	3.0	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	1.2	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	0.5	<0.5	9.2	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	0.5	<0.5	12.4	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	4.9	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	5.6	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		<0.5	0.5	<0.5	14.0	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	10.0	<0.5
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	5.8	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH221_0.5	NEL-BH221_1.0	NEL-BH221_3.0	NEL-BH118_0.5	NEL-BH118_0.8
Client sampling date / time					11-Sep-2018 09:30	11-Sep-2018 09:45	11-Sep-2018 10:00	12-Sep-2018 08:45	12-Sep-2018 09:00
Compound	CAS Number	LOR	Unit		EM1814744-001	EM1814744-002	EM1814744-003	EM1814744-005	EM1814744-006
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	1.2	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	7.4	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	1.5	<0.5	75.7	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	13.8	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	13.8	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	13.8	1.2
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
beta-BHC	319-85-7	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
delta-BHC	319-86-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
Heptachlor	76-44-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
Aldrin	309-00-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.14	<0.05
Dieldrin	60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
Endrin	72-20-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.14	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.14	<0.05
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.14	<0.05
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	<0.03	<0.03	<0.14	<0.03
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH221_0.5	NEL-BH221_1.0	NEL-BH221_3.0	NEL-BH118_0.5	NEL-BH118_0.8
Client sampling date / time					11-Sep-2018 09:30	11-Sep-2018 09:45	11-Sep-2018 10:00	12-Sep-2018 08:45	12-Sep-2018 09:00
Compound	CAS Number	LOR	Unit		EM1814744-001	EM1814744-002	EM1814744-003	EM1814744-005	EM1814744-006
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	390	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	640	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	1030	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	830	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	380	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	1210	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		91.2	93.7	93.2	110	92.1
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		82.7	81.3	81.6	87.2	81.3
Toluene-D8	2037-26-5	0.1	%		82.6	81.5	85.1	89.5	84.8
4-Bromofluorobenzene	460-00-4	0.1	%		92.0	94.2	100	97.8	92.0
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		95.2	97.8	97.1	87.6	89.7
2-Chlorophenol-D4	93951-73-6	0.025	%		74.6	77.0	77.0	72.2	69.9
2,4,6-Tribromophenol	118-79-6	0.025	%		91.3	95.3	89.8	70.0	72.4
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		86.0	89.1	89.1	88.7	83.7
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		80.9	84.0	83.2	90.7	81.8
2-Fluorobiphenyl	321-60-8	0.025	%		90.7	93.2	93.7	99.9	89.9
Anthracene-d10	1719-06-8	0.025	%		88.4	91.3	90.2	86.5	91.0
4-Terphenyl-d14	1718-51-0	0.025	%		91.2	94.4	93.7	111	94.7



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	NEL-BH118_3.5	----	----	----	----
Client sampling date / time				12-Sep-2018 09:30	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1814744-007	-----	-----	-----	-----
Result				----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	6.9	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	15.0	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Copper	7440-50-8	5	mg/kg	11	----	----	----	----
Lead	7439-92-1	5	mg/kg	13	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	20	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	25	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	410	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH118_3.5	----	----	----	----
Client sampling date / time					12-Sep-2018 09:30	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1814744-007	-----	-----	-----	-----
				Result	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg		<0.02	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg		<0.01	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg		<0.4	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg		<0.02	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg		<0.01	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg		<0.02	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg		<0.01	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg		<0.01	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg		<0.02	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg		<0.02	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg		<0.04	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg		<0.02	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg		<0.01	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg		<0.02	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg		<0.02	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg		<0.02	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg		<0.02	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg		<0.02	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg		<0.01	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH118_3.5	----	----	----	----
				Client sampling date / time	12-Sep-2018 09:30	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1814744-007	-----	-----	-----	-----
					Result	----	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH118_3.5	----	----	----	----
Client sampling date / time					12-Sep-2018 09:30	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1814744-007	-----	-----	-----	-----
				Result	----	----	----	----	----
EP075I: Organochlorine Pesticides - Continued									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-BH118_3.5	----	----	----	----
Client sampling date / time				12-Sep-2018 09:30	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1814744-007	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	91.5	----	----	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	77.2	----	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	82.7	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	92.8	----	----	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%	90.5	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%	71.3	----	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%	72.6	----	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%	85.3	----	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	81.9	----	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%	91.4	----	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%	91.8	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%	94.7	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	TB310	----	----	----	----
Client sampling date / time				13-Sep-2018 08:15	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1814744-004	-----	-----	-----	-----
Result				----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
^ Total Xylenes	----	2	µg/L	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	92.8	----	----	----	----
Toluene-D8	2037-26-5	2	%	87.8	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	99.3	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: SOIL		
Method: <i>Compound</i>	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	NEL-BH221_1.0 - 11-Sep-2018 09:45	Brown soil with rock and organic matter.
EA200: Description	NEL-BH118_0.8 - 12-Sep-2018 09:00	Beige soil with rock and organic matter.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Environmental Division
Melbourne
Work Order Reference
EM1814744



Telephone : + 61-3-8549 9600

Sampled by:	Amanda Tan	Date/Time:	11/9/18 / 12/9/18	Relinquished by:	Amanda Tan	Date/Time:	13/9/18 AM
Received by:		Date/Time:		Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Madsen (Aug)	Date/Time:	13/9, 11-20				
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)						

Peter Ravlic

From: David Quinn <David.Quinn@ghd.com>
Sent: Friday, 14 September 2018 1:41 PM
To: Peter Ravlic
Cc: Kory.Auch@ghd.com; Melbourne Enviro Services
Subject: RE: EM1814744 - GHD - 31350060910

Hi Peter

Can you please analyse for the following on standard TAT:

1. NEL-BH221_0.5 = IWRG 621
2. NEL-BH221_1.0 = IWRG 621 and asbestos presence
3. NEL-BH221_3.0 = IWRG 621
4. TB310 = Volatile TPH/BTEX
5. NEL-BH221_0.5 = IWRG 621
6. NEL-BH221_0.8 = IWRG 621 and asbestos presence
7. NEL-BH221_3.5 = IWRG 621

Also can you use the GHD project number – 31350061101 for invoicing.

Thanks

David Quinn
Senior Environmental Engineer
Waste Management & Environmental Compliance

GHD

Proudly employee owned

T: +61 3 8687 8627 | M: +61 437 227 626 | V: 318 627 | E: david.quinn@ghd.com
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Please consider our environment before printing this email

From: Peter Ravlic <peter.ravlic@alsglobal.com>
Sent: Friday, 14 September 2018 9:23 AM
To: David Quinn <David.Quinn@ghd.com>; Melbourne Enviro Services <MelbourneEnviroSer@alsglobal.com>
Subject: EM1814744 - GHD - 31350060910

Hi David

FYI, please see attached samples received without analysis.

Thanks

Ranil Weerakkody

From: Ranil Weerakkody on behalf of COC Melbourne
Sent: Friday, 14 September 2018 8:57 AM
To: Melbourne Enviro Services
Subject: EM1814744 - GHD - 31350060910
Attachments: 14092018084734-0001.pdf

Hi All

Please see attached for samples received without analysis.

Regards

Ranil
Sample Receipt Officer – Springvale
Environmental



T +61 3 8549 9600 D +61 3 8549 9617
F +61 3 8549 9626
ranil.weerakkody@alsglobal.com
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QUALITY CONTROL REPORT

Work Order	: EM1814744	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350061101	Date Samples Received	: 13-Sep-2018
Order number	: ----	Date Analysis Commenced	: 17-Sep-2018
C-O-C number	: ----	Issue Date	: 21-Sep-2018
Sampler	: AT		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 7		
No. of samples analysed	: 7		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Emily Daos	Team Leader - Asbestos	Melbourne Asbestos, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1934259)									
EM1814744-001	NEL-BH221_0.5	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.2	8.2	0.00	0% - 20%
EM1814823-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.0	8.0	0.00	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1936250)									
EM1814744-005	NEL-BH118_0.5	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.6	6.8	2.98	0% - 20%
EM1814760-003	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.3	7.3	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1934638)									
EM1814744-001	NEL-BH221_0.5	EA055: Moisture Content	----	0.1	%	6.2	6.5	3.18	No Limit
EM1814833-008	Anonymous	EA055: Moisture Content	----	0.1	%	20.3	18.6	8.78	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1934617)									
EM1814744-001	NEL-BH221_0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	15	19	24.1	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	13	21.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	30	32	7.10	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	12	80.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	28	38	29.7	No Limit
EM1814783-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	15	15	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1934617) - continued									
EM1814783-002	Anonymous	EG005T: Copper	7440-50-8	5	mg/kg	28	30	6.52	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	40	38	3.90	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	72	66	10.0	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1934616)									
EM1814744-001	NEL-BH221_0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1814783-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1935325)									
EM1814720-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1814720-026	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1936657)									
EM1814720-002	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1814720-026	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1934247)									
EM1814744-001	NEL-BH221_0.5	EK040T: Fluoride	16984-48-8	40	mg/kg	260	240	6.81	No Limit
EM1814762-004	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	230	240	4.33	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1935228)									
EM1814720-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1814720-028	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.5	<0.5	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1934208)									
EM1814744-001	NEL-BH221_0.5	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1934208)									
EM1814744-001	NEL-BH221_0.5	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1934208)									
EM1814744-001	NEL-BH221_0.5	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1934208) - continued									
EM1814744-001	NEL-BH221_0.5	EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1935226)									
EM1814720-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1814720-028	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.29	<0.29	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1935226)									
EM1814720-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1935226) - continued									
EM1814720-002	Anonymous	EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1814720-028	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<6	<6	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<6	<6	0.00	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<6	<6	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<6	<6	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<6	<6	0.00	No Limit
		EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1935226)							
EM1814720-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1814720-028	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1935226) - continued									
EM1814720-028	Anonymous	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1935226)									
EM1814720-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1814720-028	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.15	<0.14	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1935226) - continued									
EM1814720-028	Anonymous	EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.15	<0.14	0.00	No Limit
		EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.15	<0.14	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1934208)									
EM1814744-001	NEL-BH221_0.5	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1935227)									
EM1814720-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1814720-028	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	350	260	27.7	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	1030	830	21.5	0% - 50%
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1934208)									
EM1814744-001	NEL-BH221_0.5	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1935227)									
EM1814720-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1814720-028	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	1010	790	24.4	0% - 50%
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	940	790	18.2	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1935912)									
EM1814832-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	70	50	34.0	No Limit
EM1814832-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	100	90	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1935912)									
EM1814832-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	60	40	38.8	No Limit
EM1814832-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	150	140	0.00	No Limit
EP080: BTEXN (QC Lot: 1935912)									
EM1814832-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit

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 Work Order : EM1814744
 Client : GHD PTY LTD
 Project : 31350061101



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 1935912) - continued									
EM1814832-003	Anonymous	EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1814832-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1934617)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.3	78	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	87.2	76	108
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.0	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	92.4	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	92.5	78	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	95.8	80	109
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	98.2	92	110
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.8	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	103	78	117
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	93.2	79	110
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1934616)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	82.8	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1935325)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	80.5	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1936657)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	95.6	80	107
EK040T: Fluoride Total (QCLot: 1934247)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	88.5	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1935228)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	118	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1934208)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	86.4	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	84.6	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	84.2	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	80.6	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	89.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	87.4	74	114
EP074H: Naphthalene (QCLot: 1934208)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	82.3	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1934208)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	86.5	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	84.0	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1934208) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	85.5	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.7	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	85.4	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	88.3	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	85.1	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	85.6	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	89.8	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	89.1	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	88.3	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	84.2	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.2	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	68.0	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	83.8	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	85.0	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	85.4	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	66.5	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1935226)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	86.8	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	110	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	100	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	117	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	102	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	124	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	107	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	102	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	118	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1935226)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	106	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	87.6	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	98.4	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	110	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	81.1	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	24 mg/kg	80.1	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	99.8	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	116	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	106	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	105	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1935226)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	99.8	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	108	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	102	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	106	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	101	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	101	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	103	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	102	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	103	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	104	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	103	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	98.8	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	104	55	137
EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	104	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	104	55	137
EP075I: Organochlorine Pesticides (QCLot: 1935226)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	107	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	103	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	107	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	107	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	105	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	97.7	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	99.6	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	98.0	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	98.4	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	98.8	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	102	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	105	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	102	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	105	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	101	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	103	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	101	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	100	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	98.3	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	99.9	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1934208)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	75.1	69	114



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1935227)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	90.8	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	98.4	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	87.6	77	116
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1934208)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	74.6	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1935227)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	90.2	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	91.6	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	90.0	68	124

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1935912)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	86.3	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1935912)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	84.0	66	123
EP080: BTEXN (QCLot: 1935912)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	89.4	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	93.5	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	91.4	73	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	92.5	72	131
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	97.2	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	104	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number			Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1934617)							
EM1814744-002	NEL-BH221_1.0	EG005T: Arsenic	7440-38-2	50 mg/kg	95.7	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.9	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	123	82	124



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1934617) - continued							
EM1814744-002	NEL-BH221_1.0	EG005T: Lead	7439-92-1	50 mg/kg	# Not Determined	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	84.8	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	89.3	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	89.3	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	112	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1934616)							
EM1814744-002	NEL-BH221_1.0	EG035T: Mercury	7439-97-6	5 mg/kg	94.1	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1935325)							
EM1814720-006	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	87.4	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1936657)							
EM1814720-006	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	96.2	77	113
EK040T: Fluoride Total (QCLot: 1934247)							
EM1814744-002	NEL-BH221_1.0	EK040T: Fluoride	16984-48-8	400 mg/kg	93.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1935228)							
EM1814720-010	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	124	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1934208)							
EM1814744-002	NEL-BH221_1.0	EP074-UT: Benzene	71-43-2	2 mg/kg	81.0	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	81.4	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1934208)							
EM1814744-002	NEL-BH221_1.0	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	80.0	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	76.3	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	85.9	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1935226)							
EM1814720-006	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	111	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	115	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	67.3	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1935226)							
EM1814720-006	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	119	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	106	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1935226)							
EM1814720-006	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	127	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	119	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1934208)							
EM1814744-002	NEL-BH221_1.0	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	56.7	43	111

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 Work Order : EM1814744
 Client : GHD PTY LTD
 Project : 31350061101



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1935227)							
EM1814720-009	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	77.9	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	92.3	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	82.4	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1934208)							
EM1814744-002	NEL-BH221_1.0	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	57.4	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1935227)							
EM1814720-009	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	81.0	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	86.4	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	71.6	44	126

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1935912)							
EM1814832-005	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	62.1	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1935912)							
EM1814832-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	60.6	44	122
EP080: BTEXN (QCLot: 1935912)							
EM1814832-005	Anonymous	EP080: Benzene	71-43-2	20 µg/L	84.3	68	130
		EP080: Toluene	108-88-3	20 µg/L	90.5	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1814744	Page	: 1 of 10
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350061101	Date Samples Received	: 13-Sep-2018
Site	: ----	Issue Date	: 21-Sep-2018
Sampler	: AT	No. of samples received	: 7
Order number	:	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EM1814744--002	NEL-BH221_1.0	Lead	7439-92-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	17-Sep-2018	18-Sep-2018	✓	17-Sep-2018	17-Sep-2018	✓
Soil Glass Jar - Unpreserved (EA001) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	18-Sep-2018	19-Sep-2018	✓	18-Sep-2018	18-Sep-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	----	----	----	17-Sep-2018	25-Sep-2018	✓
Soil Glass Jar - Unpreserved (EA055) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	----	----	----	17-Sep-2018	26-Sep-2018	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH221_1.0		11-Sep-2018	----	----	----	18-Sep-2018	10-Mar-2019	✓
Snap Lock Bag - Subsampled by ALS (EA200) NEL-BH118_0.8		12-Sep-2018	----	----	----	18-Sep-2018	11-Mar-2019	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	19-Sep-2018	10-Mar-2019	✔	19-Sep-2018	10-Mar-2019	✔
Soil Glass Jar - Unpreserved (EG005T) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	19-Sep-2018	11-Mar-2019	✔	19-Sep-2018	11-Mar-2019	✔
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	19-Sep-2018	09-Oct-2018	✔	19-Sep-2018	09-Oct-2018	✔
Soil Glass Jar - Unpreserved (EG035T) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	19-Sep-2018	10-Oct-2018	✔	19-Sep-2018	10-Oct-2018	✔
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	18-Sep-2018	09-Oct-2018	✔	18-Sep-2018	25-Sep-2018	✔
Soil Glass Jar - Unpreserved (EG048G) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	18-Sep-2018	10-Oct-2018	✔	18-Sep-2018	25-Sep-2018	✔
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	19-Sep-2018	25-Sep-2018	✔	20-Sep-2018	03-Oct-2018	✔
Soil Glass Jar - Unpreserved (EK026SF) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	19-Sep-2018	26-Sep-2018	✔	20-Sep-2018	03-Oct-2018	✔
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	17-Sep-2018	09-Oct-2018	✔	19-Sep-2018	09-Oct-2018	✔
Soil Glass Jar - Unpreserved (EK040T) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	17-Sep-2018	10-Oct-2018	✔	19-Sep-2018	10-Oct-2018	✔
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	18-Sep-2018	25-Sep-2018	✔	18-Sep-2018	28-Oct-2018	✔
Soil Glass Jar - Unpreserved (EP066-EM) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	18-Sep-2018	26-Sep-2018	✔	18-Sep-2018	28-Oct-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	17-Sep-2018	18-Sep-2018	✔	17-Sep-2018	18-Sep-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	17-Sep-2018	19-Sep-2018	✔	17-Sep-2018	19-Sep-2018	✔
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	17-Sep-2018	18-Sep-2018	✔	17-Sep-2018	18-Sep-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	17-Sep-2018	19-Sep-2018	✔	17-Sep-2018	19-Sep-2018	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	17-Sep-2018	18-Sep-2018	✔	17-Sep-2018	18-Sep-2018	✔
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	17-Sep-2018	19-Sep-2018	✔	17-Sep-2018	19-Sep-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	18-Sep-2018	25-Sep-2018	✔	18-Sep-2018	28-Oct-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	18-Sep-2018	26-Sep-2018	✔	18-Sep-2018	28-Oct-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	18-Sep-2018	25-Sep-2018	✔	18-Sep-2018	28-Oct-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	18-Sep-2018	26-Sep-2018	✔	18-Sep-2018	28-Oct-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	18-Sep-2018	25-Sep-2018	✔	18-Sep-2018	28-Oct-2018	✔
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	18-Sep-2018	26-Sep-2018	✔	18-Sep-2018	28-Oct-2018	✔



Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	18-Sep-2018	25-Sep-2018	✓	18-Sep-2018	28-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP075-EM) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	18-Sep-2018	26-Sep-2018	✓	18-Sep-2018	28-Oct-2018	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	17-Sep-2018	18-Sep-2018	✓	17-Sep-2018	18-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	18-Sep-2018	25-Sep-2018	✓	18-Sep-2018	28-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	17-Sep-2018	19-Sep-2018	✓	17-Sep-2018	19-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	18-Sep-2018	26-Sep-2018	✓	18-Sep-2018	28-Oct-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	17-Sep-2018	18-Sep-2018	✓	17-Sep-2018	18-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH221_0.5, NEL-BH221_3.0	NEL-BH221_1.0,	11-Sep-2018	18-Sep-2018	25-Sep-2018	✓	18-Sep-2018	28-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP074-UT) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	17-Sep-2018	19-Sep-2018	✓	17-Sep-2018	19-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP071-EM) NEL-BH118_0.5, NEL-BH118_3.5	NEL-BH118_0.8,	12-Sep-2018	18-Sep-2018	26-Sep-2018	✓	18-Sep-2018	28-Oct-2018	✓

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) TB310	13-Sep-2018	18-Sep-2018	27-Sep-2018	✓	19-Sep-2018	27-Sep-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) TB310	13-Sep-2018	18-Sep-2018	27-Sep-2018	✓	19-Sep-2018	27-Sep-2018	✓



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) TB310	13-Sep-2018	18-Sep-2018	27-Sep-2018	✓	19-Sep-2018	27-Sep-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
Total Fluoride	EK040T	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1815165**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **11**
No. of samples analysed : **9**

Page : 1 of 23
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 20-Sep-2018 14:50
Date Analysis Commenced : 21-Sep-2018
Issue Date : 01-Oct-2018 10:40



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini		Sydney Organics, Smithfield, NSW
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP075-EM: Poor surrogate recovery for sample EM185165-009 due to sample matrix interference.
- EG035F: EM1815106 #2 Poor matrix spike recovery for dissolved mercury due to sample matrix. Confirmed by re-extraction and re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH003_0.2m	NEL-ENV-BH003_0.5m	NEL-ENV-BH003_1.0m	NEL-ENV-BH005_0.2m	NEL-ENV-BH005_0.5m
Client sampling date / time					18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 12:00	18-Sep-2018 12:00
Compound	CAS Number	LOR	Unit		EM1815165-001	EM1815165-002	EM1815165-003	EM1815165-005	EM1815165-006
				Result	Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		7.1	----	6.9	----	7.0
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		----	17.7	----	19.7	----
Moisture Content	----	1.0	%		22.5	----	21.5	----	20.7
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		5	----	<5	----	5
Cadmium	7440-43-9	1	mg/kg		<1	----	<1	----	<1
Copper	7440-50-8	5	mg/kg		11	----	16	----	14
Lead	7439-92-1	5	mg/kg		14	----	11	----	11
Molybdenum	7439-98-7	2	mg/kg		<2	----	<2	----	<2
Nickel	7440-02-0	2	mg/kg		19	----	24	----	36
Selenium	7782-49-2	5	mg/kg		<5	----	<5	----	<5
Silver	7440-22-4	2	mg/kg		<2	----	<2	----	<2
Tin	7440-31-5	5	mg/kg		<5	----	<5	----	<5
Zinc	7440-66-6	5	mg/kg		32	----	40	----	47
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	<0.1	----	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	<1	----	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		310	----	500	----	460
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	<0.1	----	<0.1
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	<0.2	----	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
Styrene	100-42-5	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	<0.2	----	<0.2



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH003_0.2m	NEL-ENV-BH003_0.5m	NEL-ENV-BH003_1.0m	NEL-ENV-BH005_0.2m	NEL-ENV-BH005_0.5m
Client sampling date / time				18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 12:00	18-Sep-2018 12:00
Compound	CAS Number	LOR	Unit	EM1815165-001	EM1815165-002	EM1815165-003	EM1815165-005	EM1815165-006
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	<1	----	<1	----	<1
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	<0.4	----	<0.4
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	<0.04	----	<0.04
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	<0.02	----	<0.02
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	<0.01	----	<0.01
EP075A: Phenolic Compounds (Halogenated)								
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	----	<0.03	----	<0.03



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH003_0.2m	NEL-ENV-BH003_0.5m	NEL-ENV-BH003_1.0m	NEL-ENV-BH005_0.2m	NEL-ENV-BH005_0.5m
Client sampling date / time				18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 12:00	18-Sep-2018 12:00
Compound	CAS Number	LOR	Unit	EM1815165-001	EM1815165-002	EM1815165-003	EM1815165-005	EM1815165-006
				Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	<0.2	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	<1	----	<1
2-Methylphenol	95-48-7	1	mg/kg	<1	----	<1	----	<1
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	<1	----	<1
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	<1	----	<1
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	<1	----	<1
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	<5	----	<5
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	<5	----	<5
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	<5	----	<5
Dinoseb	88-85-7	5	mg/kg	<5	----	<5	----	<5
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	<5	----	<5
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	<1	----	<1
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-ENV-BH003_0.2m	NEL-ENV-BH003_0.5m	NEL-ENV-BH003_1.0m	NEL-ENV-BH005_0.2m	NEL-ENV-BH005_0.5m
Client sampling date / time				18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 12:00	18-Sep-2018 12:00
Compound	CAS Number	LOR	Unit	EM1815165-001	EM1815165-002	EM1815165-003	EM1815165-005	EM1815165-006
				Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	0.6	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	1.2	----	1.2
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
Endrin	72-20-8	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	----	<0.05	----	<0.05
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	<0.03	----	<0.03
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	<10	----	<10
C10 - C14 Fraction	----	50	mg/kg	<50	----	<50	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	<10	----	<10
C15 - C28 Fraction	----	100	mg/kg	<100	----	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg	<100	----	<100	----	<100



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH003_0.2m	NEL-ENV-BH003_0.5m	NEL-ENV-BH003_1.0m	NEL-ENV-BH005_0.2m	NEL-ENV-BH005_0.5m
Client sampling date / time					18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 12:00	18-Sep-2018 12:00
Compound	CAS Number	LOR	Unit		EM1815165-001	EM1815165-002	EM1815165-003	EM1815165-005	EM1815165-006
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	<50	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	----	<100	----	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	----	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	<50	----	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	----	<10
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH003_0.2m	NEL-ENV-BH003_0.5m	NEL-ENV-BH003_1.0m	NEL-ENV-BH005_0.2m	NEL-ENV-BH005_0.5m
Client sampling date / time				18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 12:00	18-Sep-2018 12:00	
Compound	CAS Number	LOR	Unit	EM1815165-001	EM1815165-002	EM1815165-003	EM1815165-005	EM1815165-006	
				Result	Result	Result	Result	Result	
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
EP066S: PCB Surrogate									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH003_0.2m	NEL-ENV-BH003_0.5m	NEL-ENV-BH003_1.0m	NEL-ENV-BH005_0.2m	NEL-ENV-BH005_0.5m
Client sampling date / time					18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 10:00	18-Sep-2018 12:00	18-Sep-2018 12:00
Compound	CAS Number	LOR	Unit		EM1815165-001	EM1815165-002	EM1815165-003	EM1815165-005	EM1815165-006
					Result	Result	Result	Result	Result
EP066S: PCB Surrogate - Continued									
Decachlorobiphenyl	2051-24-3	0.1	%		111	----	109	----	107
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		78.8	----	78.8	----	68.2
Toluene-D8	2037-26-5	0.1	%		69.0	----	71.7	----	58.5
4-Bromofluorobenzene	460-00-4	0.1	%		77.3	----	75.7	----	63.6
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		95.0	----	84.2	----	93.4
2-Chlorophenol-D4	93951-73-6	0.025	%		71.2	----	63.7	----	70.1
2,4,6-Tribromophenol	118-79-6	0.025	%		72.0	----	61.2	----	63.2
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		91.8	----	80.7	----	89.5
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%		89.5	----	79.8	----	88.2
2-Fluorobiphenyl	321-60-8	0.025	%		97.4	----	86.2	----	94.0
Anthracene-d10	1719-06-8	0.025	%		102	----	92.7	----	100
4-Terphenyl-d14	1718-51-0	0.025	%		104	----	94.1	----	102
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		79.0	76.5	94.5	80.0	75.0
13C8-PFOA	----	0.0002	%		68.0	64.5	68.5	66.0	61.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH005_1.0m	----	----	----	----
Client sampling date / time				18-Sep-2018 12:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1815165-007	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	7.1	----	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	21.0	----	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	13	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	10	----	----	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----	----
Nickel	7440-02-0	2	mg/kg	22	----	----	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----	----
Zinc	7440-66-6	5	mg/kg	36	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg	460	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----	----
Styrene	100-42-5	0.5	mg/kg	<0.5	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	<0.2	----	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH005_1.0m	----	----	----	----
Client sampling date / time				18-Sep-2018 12:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1815165-007	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----	----
EP074I: Volatile Halogenated Compounds									
Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	----	----	----	----	----
1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	----	----	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	<0.4	----	----	----	----	----
trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	----	----	----	----	----
cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	----	----	----	----	----
Chloroform	67-66-3	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	----	----	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	----	----	----	----	----
1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	----	----	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	----	----	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	----	----	----	----	----
1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	----	----	----	----	----
1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	----	----	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	----	----	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	----	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	----	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	----	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	----	----	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	<0.01	----	----	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	----	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	----	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	----	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	----	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	----	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	----	----	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	----	----	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	----	----	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	----	----	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	<0.03	----	----	----	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH005_1.0m	----	----	----	----
				Client sampling date / time	18-Sep-2018 12:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1815165-007	-----	-----	-----	-----
					Result	----	----	----	----

EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	<1	----	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	<1	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	----	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	<1	----	----	----	----
2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	----	----	----	----
2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	----	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	<5	----	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	----	----	----	----
Dinoseb	88-85-7	5	mg/kg	<5	----	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	----	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	<1	----	----	----	----

Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----

EP075I: Organochlorine Pesticides



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

NEL-ENV-BH005_1.0m

Client sampling date / time

18-Sep-2018 12:00

Compound CAS Number LOR Unit

EM1815165-007

Result

EP075I: Organochlorine Pesticides - Continued

alpha-BHC	319-84-6	0.03	mg/kg	<0.03	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	----	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	<0.03	----	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	<0.03	----	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	<0.03	----	----	----	----
Aldrin	309-00-2	0.03	mg/kg	<0.03	----	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	----	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	----	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	<0.03	----	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	----	----	----	----
Endrin	72-20-8	0.03	mg/kg	<0.03	----	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	----	----	----	----
4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	<0.03	----	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	<0.03	----	----	----	----

EP080/071: Total Petroleum Hydrocarbons

C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----

EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH005_1.0m	----	----	----	----
Client sampling date / time				18-Sep-2018 12:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1815165-007	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH005_1.0m	----	----	----	----
Client sampling date / time				18-Sep-2018 12:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1815165-007	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	110	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH005_1.0m	----	----	----	----
Client sampling date / time				18-Sep-2018 12:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1815165-007	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1,2-Dichloroethane-D4	17060-07-0	0.1	%	63.9	----	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	55.9	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	65.5	----	----	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%	96.8	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%	72.7	----	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.025	%	72.6	----	----	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%	93.1	----	----	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.025	%	91.3	----	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%	98.2	----	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%	102	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%	105	----	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%	86.5	----	----	----	----	----
13C8-PFOA	----	0.0002	%	65.5	----	----	----	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				RB143	FB143	TB143	----	----
Client sampling date / time				18-Sep-2018 13:00	18-Sep-2018 08:00	18-Sep-2018 08:00	----	----
Compound	CAS Number	LOR	Unit	EM1815165-009	EM1815165-010	EM1815165-011	-----	-----
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.10	6.12	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Methylene chloride	75-09-2	5	µg/L	<5	<5	----	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB143	FB143	TB143	----	----
Client sampling date / time					18-Sep-2018 13:00	18-Sep-2018 08:00	18-Sep-2018 08:00	----	----
Compound	CAS Number	LOR	Unit		EM1815165-009	EM1815165-010	EM1815165-011	-----	-----
					Result	Result	Result	----	----
EP074E: Halogenated Aliphatic Compounds - Continued									
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	----	----	----
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	2	µg/L		<2	<2	----	----	----
2.4-Dichlorophenol	120-83-2	2	µg/L		<2	<2	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Client sample ID

				RB143	FB143	TB143	----	----
Client sampling date / time				18-Sep-2018 13:00	18-Sep-2018 08:00	18-Sep-2018 08:00	----	----
Compound	CAS Number	LOR	Unit	EM1815165-009	EM1815165-010	EM1815165-011	-----	-----
				Result	Result	Result	----	----
EP075A: Phenolic Compounds (Halogenated) - Continued								
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	<2	----	----	----
4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	<4	----	----	----
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	<2	----	----	----
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	<2	----	----	----
2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	<2	----	----	----
2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-90-2	2	µg/L	<2	<2	----	----	----
Pentachlorophenol	87-86-5	2	µg/L	<2	<2	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	4	µg/L	<4	<4	----	----	----
2-Methylphenol	95-48-7	4	µg/L	<4	<4	----	----	----
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	<4	----	----	----
2-Nitrophenol	88-75-5	4	µg/L	<4	<4	----	----	----
2,4-Dimethylphenol	105-67-9	4	µg/L	<4	<4	----	----	----
2,4-Dinitrophenol	51-28-5	100	µg/L	<100	<100	----	----	----
4-Nitrophenol	100-02-7	50	µg/L	<50	<50	----	----	----
2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	<50	----	----	----
Dinoseb	88-85-7	50	µg/L	<50	<50	----	----	----
2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	<50	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	----	----	----
4,4`-DDT	50-29-3	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB143	FB143	TB143	----	----
Client sampling date / time					18-Sep-2018 13:00	18-Sep-2018 08:00	18-Sep-2018 08:00	----	----
Compound	CAS Number	LOR	Unit		EM1815165-009	EM1815165-010	EM1815165-011	-----	-----
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		89.0	86.9	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	5	%		85.3	106	----	----	----
Toluene-D8	2037-26-5	5	%		90.5	113	----	----	----
4-Bromofluorobenzene	460-00-4	5	%		96.0	109	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		26.8	27.5	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		71.4	71.0	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		41.3	62.0	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		81.4	80.8	----	----	----
Anthracene-d10	1719-06-8	1.0	%		94.8	94.0	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		89.0	88.1	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RB143	FB143	TB143	----	----
Client sampling date / time					18-Sep-2018 13:00	18-Sep-2018 08:00	18-Sep-2018 08:00	----	----
Compound	CAS Number	LOR	Unit		EM1815165-009	EM1815165-010	EM1815165-011	-----	-----
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.25	%		31.3	37.2	----	----	----
2-Chlorophenol-D4	93951-73-6	0.25	%		57.1	73.4	----	----	----
2,4,6-Tribromophenol	118-79-6	0.25	%		50.4	72.0	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.25	%		61.7	87.7	----	----	----
1,2-Dichlorobenzene-D4	2199-69-1	0.25	%		56.8	82.1	----	----	----
2-Fluorobiphenyl	321-60-8	0.25	%		59.4	84.2	----	----	----
Anthracene-d10	1719-06-8	0.25	%		63.9	88.0	----	----	----
4-Terphenyl-d14	1718-51-0	0.25	%		63.0	88.2	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		90.4	112	106	----	----
Toluene-D8	2037-26-5	2	%		89.3	112	107	----	----
4-Bromofluorobenzene	460-00-4	2	%		99.5	119	122	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1,2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	28	134
2-Chlorophenol-D4	93951-73-6	27	123
2,4,6-Tribromophenol	118-79-6	25	149
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	29	125
1,2-Dichlorobenzene-D4	2199-69-1	31	117
2-Fluorobiphenyl	321-60-8	44	136
Anthracene-d10	1719-06-8	53	133
4-Terphenyl-d14	1718-51-0	59	141
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	125
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	132
Toluene-D8	2037-26-5	77	132
4-Bromofluorobenzene	460-00-4	67	131
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	13	90
2-Chlorophenol-D4	93951-73-6	42	117



Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075S: Acid Extractable Surrogates (Waste Classification) - Continued			
2,4,6-Tribromophenol	118-79-6	52	140
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	49	136
1,2-Dichlorobenzene-D4	2199-69-1	49	128
2-Fluorobiphenyl	321-60-8	57	137
Anthracene-d10	1719-06-8	67	137
4-Terphenyl-d14	1718-51-0	66	136
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Friday, 21 September 2018 9:15 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: On Hold - EM1815165 - GHDSER (31350060910)
Attachments: 20092018174507-0001.pdf

Hi Shirley,

If possible, could you please analyse the following on standard TAT:

EM1815165:

- 1 NEL-ENV-BH003_0.2m = IWRG621 and PFAS (Full Suite)
- 2 NEL-ENV-BH003_0.5m = PFAS (Full Suite)
- 3 NEL-ENV-BH003_1.0m = IWRG621 and PFAS (Full Suite)
- 5 NEL-ENV-BH005_0.2m = PFAS (Full Suite)
- 6 NEL-ENV-BH005_0.5m = IWRG621 and PFAS (Full Suite)
- 7 NEL-ENV-BH005_1.0m = IWRG621 and PFAS (Full Suite)
- 9 RB143 = IWRG621 water equivalent
- 10 FB143 = IWRG621 water equivalent
- 11 TB143 = Volatile TPH/BTEX

I know that only 1 glass jar of soil was collected, so I'm not sure if PFAS can be analysed.

Let me know if there are any issues.

Thanks,

Kory Auch

GHD

T: 03 8687 8948 | V: 318948 | M: 0478 797 000 | E: kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>

Sent: Friday, 21 September 2018 7:41 AM

To: David Quinn <David.Quinn@ghd.com>; Kory Auch <Kory.Auch@ghd.com>

Subject: FW: On Hold - EM1815165 - GHDSER (31350060910)

Hi David & Kory

Please let me know if the samples received yesterday require analysis.

Thanks

Shirley

QUALITY CONTROL REPORT

Work Order	: EM1815165	Page	: 1 of 23
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 20-Sep-2018
Order number	: ----	Date Analysis Commenced	: 21-Sep-2018
C-O-C number	: ----	Issue Date	: 01-Oct-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 11		
No. of samples analysed	: 9		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini		Sydney Organics, Smithfield, NSW
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1946301)									
EM1815083-002	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.0	7.1	1.42	0% - 20%
EM1815083-023	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	6.5	7.0	7.41	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 1946302)									
EM1815165-007	NEL-ENV-BH005_1.0m	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.1	7.1	0.00	0% - 20%
EM1815227-037	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	7.5	7.4	1.34	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1946348)									
EM1815165-001	NEL-ENV-BH003_0.2m	EA055: Moisture Content	----	0.1	%	22.5	22.6	0.00	0% - 20%
EM1815227-011	Anonymous	EA055: Moisture Content	----	0.1	%	22.1	21.6	1.94	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1946991)									
EM1815108-006	Anonymous	EA055: Moisture Content	----	0.1	%	24.5	24.0	2.11	0% - 20%
ES1827949-001	Anonymous	EA055: Moisture Content	----	0.1	%	29.5	26.7	9.71	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1947250)									
EM1815165-001	NEL-ENV-BH003_0.2m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	19	19	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	11	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	12	16.3	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	29	9.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit
EM1815230-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 1947250) - continued									
EM1815230-008	Anonymous	EG005T: Nickel	7440-02-0	2	mg/kg	5	4	0.00	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	8	38.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	7	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	12	13.9	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	16	12	23.9	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1947249)									
EM1815165-001	NEL-ENV-BH003_0.2m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1815230-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1948088)									
EM1814620-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1815128-022	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1948753)									
EM1814839-002	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EM1815165-003	NEL-ENV-BH003_1.0m	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK040T: Fluoride Total (QC Lot: 1944439)									
EM1815165-001	NEL-ENV-BH003_0.2m	EK040T: Fluoride	16984-48-8	40	mg/kg	310	360	13.6	No Limit
EM1815226-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	160	130	19.4	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1945259)									
EM1814839-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1815201-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1944320)									
EM1815165-001	NEL-ENV-BH003_0.2m	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 1944320)									
EM1815165-001	NEL-ENV-BH003_0.2m	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1944320)									
EM1815165-001	NEL-ENV-BH003_0.2m	EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074I: Volatile Halogenated Compounds (QC Lot: 1944320) - continued									
EM1815165-001	NEL-ENV-BH003_0.2m	EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.00	No Limit
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.00	No Limit		
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1945257)									
EM1814839-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM1815201-002	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/58-9 0-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1945257)									
EM1814839-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1945257) - continued									
EM1814839-002	Anonymous	EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EM1815201-002	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.00	No Limit
		EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.00	No Limit
		EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.00	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1945257)									
EM1814839-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			207-08-9						
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1815201-002	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1945257) - continued									
EM1815201-002	Anonymous	EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1945257)									
EM1814839-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EM1815201-002	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075I: Organochlorine Pesticides (QC Lot: 1945257) - continued									
EM1815201-002	Anonymous	EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.00	No Limit
		EP075-EM: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP075-EM: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP075-EM: 4,4'-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit		
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1944320)									
EM1815165-001	NEL-ENV-BH003_0.2m	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1945258)									
EM1814839-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1815201-002	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1944320)									
EM1815165-001	NEL-ENV-BH003_0.2m	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1945258)									
EM1814839-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EM1815201-002	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1948444)									
EM1815165-001	NEL-ENV-BH003_0.2m	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
ES1828168-035	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1948444) - continued									
ES1828168-035	Anonymous	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0004	0.0004	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1948444)									
EM1815165-001	NEL-ENV-BH003_0.2m	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
ES1828168-035	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0042	0.0042	0.00	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0007	0.0006	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0004	0.0004	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0003	0.0003	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	0.0004	0.0004	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	0.002	0.001	0.00	No Limit		
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1948444)									
EM1815165-001	NEL-ENV-BH003_0.2m	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1948444) - continued									
ES1828168-035	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1948444)									
EM1815165-001	NEL-ENV-BH003_0.2m	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
ES1828168-035	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 1948038)									
EM1815165-009	RB143	EA005-P: pH Value	----	0.01	pH Unit	7.10	6.21	13.4	0% - 20%
EM1815196-007	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	9.09	9.09	0.00	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1950372)									
EM1815106-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.005	0.005	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.004	0.005	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit

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 Work Order : EM1815165
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1950372) - continued									
EM1815106-001	Anonymous	EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.010	0.010	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.013	0.013	0.00	0% - 50%
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.014	0.014	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	0.01	0.01	0.00	No Limit
EM1815165-010	FB143	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1950374)									
EM1815165-009	RB143	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1950373)									
EM1815106-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1815165-010	FB143	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 1947014)									
EM1815156-001	Anonymous	EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1946683)									
EM1815210-012	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.00	No Limit
EM1815204-001	Anonymous	EK026SF: Total Cyanide	57-12-5	0.004	mg/L	4.28	4.12	3.69	0% - 20%
EK040P: Fluoride by PC Titrator (QC Lot: 1948039)									
EM1815165-009	RB143	EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1815264-008	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	4.6	4.7	3.71	0% - 20%
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1947806)									
EM1815238-002	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
EM1815238-004	Anonymous	EP074: Styrene	100-42-5	5	µg/L	9	10	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1947806)									
EM1815238-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074E: Halogenated Aliphatic Compounds (QC Lot: 1947806) - continued									
EM1815238-002	Anonymous	EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EM1815238-004	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Methylene chloride	75-09-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 1947806)									
EM1815238-002	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EM1815238-004	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 1947806)									
EM1815238-002	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EM1815238-004	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1944258)									
EM1815222-005	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	410	<100	122	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	90	<50	57.3	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1947807)									
EM1815238-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1815238-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	11500	12000	4.27	No Limit

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 Work Order : EM1815165
 Client : GHD PTY LTD
 Project : 31350060910



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1944258)									
EM1815222-005	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	230	<100	77.9	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	300	<100	101	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1947807)									
EM1815238-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1815238-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	11200	11700	4.36	No Limit
EP080: BTEXN (QC Lot: 1947807)									
EM1815238-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1815238-004	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	520	556	6.65	No Limit
		EP080: Toluene	108-88-3	2	µg/L	7420	7640	2.91	0% - 20%
		EP080: Ethylbenzene	100-41-4	2	µg/L	560	593	5.63	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	896	903	0.763	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	582	597	2.55	No Limit
EP080: Naphthalene	91-20-3	5	µg/L	41	42	0.00	No Limit		



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005T: Total Metals by ICP-AES (QCLot: 1947250)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	93.0	78	107
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	90.6	76	108
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.8	78	108
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	89.8	78	106
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	7.9 mg/kg	90.9	78	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	97.6	80	109
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	97.6	92	110
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.1 mg/kg	93.5	80	108
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.2 mg/kg	88.9	78	117
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	97.4	79	110
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1947249)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.4	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1948088)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	85.6	75	112
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1948753)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	93.5	80	107
EK040T: Fluoride Total (QCLot: 1944439)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	88.5	75	110
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1945259)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	96.1	63	118
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1944320)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	82.0	74	118
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	78.9	70	124
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	78.9	71	122
EP074-UT: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4.2 mg/kg	76.9	70	118
	106-42-3							
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	81.6	76	116
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	78.7	74	114
EP074H: Naphthalene (QCLot: 1944320)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	89.3	77	111
EP074I: Volatile Halogenated Compounds (QCLot: 1944320)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	75.8	49	133
EP074-UT: 1,1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	75.2	62	127



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074I: Volatile Halogenated Compounds (QCLot: 1944320) - continued								
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	85.0	68	107
EP074-UT: trans-1,2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	77.0	68	124
EP074-UT: cis-1,2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	81.5	74	118
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	80.3	72	118
EP074-UT: 1,1,1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	78.9	67	119
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	77.0	65	119
EP074-UT: 1,2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	91.6	73	120
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	78.6	72	124
EP074-UT: 1,1,2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	88.5	74	122
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	74.6	64	124
EP074-UT: 1,1,1,2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	82.1	70	119
EP074-UT: 1,1,1,2,2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	87.4	71	125
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	71.1	61	125
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	81.9	73	117
EP074-UT: 1,4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	79.2	69	118
EP074-UT: 1,2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	83.7	75	114
EP074-UT: 1,2,4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	75.0	59	124
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1945257)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	85.6	54	122
EP075-EM: 2,4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	106	58	131
EP075-EM: 2,6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	103	55	118
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	117	62	129
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	109	53	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	120	60	126
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	106	56	118
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	107	54	125
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	113	52	124
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1945257)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	116	56	120
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	93.5	52	131
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	106	59	132
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	116	53	130
EP075-EM: 2,4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	88.5	43	120
EP075-EM: 2,4-Dinitrophenol	51-28-5	5	mg/kg	<5	24 mg/kg	116	23	125
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	12 mg/kg	99.1	59	133
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	5	mg/kg	<5	12 mg/kg	93.6	47	125
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	12 mg/kg	101	51	123
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	109	12	132



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1945257)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	109	58	121
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	97.4	55	126
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	107	59	120
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	107	64	122
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	108	70	128
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	109	55	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	110	68	134
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	109	69	131
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	113	65	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	113	68	134
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	112	64	134
	207-08-9							
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	110	62	132
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	113	55	137
EP075-EM: Dibenzo(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	113	54	136
EP075-EM: Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	113	55	137
EP075I: Organochlorine Pesticides (QCLot: 1945257)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	107	68	122
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	104	65	122
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	106	62	133
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	107	68	126
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	108	68	133
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	107	62	128
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	107	66	128
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	106	62	133
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	107	62	132
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	107	61	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	108	63	136
EP075-EM: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	113	57	131
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	108	65	137
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	117	24	174
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	119	55	148
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	109	66	135
EP075-EM: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	110	66	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	111	63	139
EP075-EM: 4,4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	108	59	134
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	111	61	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1944320)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	87.1	69	114



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1945258)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	100	73	134
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	104	81	112
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	101	77	116
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1944320)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	85.1	69	112
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTE X	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1945258)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	101	77	127
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	105	79	113
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	97.0	68	124
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1948444)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	124	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1948444)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	93.2	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	124	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	123	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	123	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	53	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.8	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	105	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1948444)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	112	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.7	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.0	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.4	58	125

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1948444) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1948444)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	120	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	124	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	122	62	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	106	60	130
Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1950372)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	91	107
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.4	84	104
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	94.0	82	103
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.7	83	105
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	102	83	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.6	82	106
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	97.8	82	109
EG020A-F: Tin	7440-31-5	0.001	mg/L	<0.001	0.1 mg/L	99.9	83	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	85	109
EG020F: Dissolved Metals by ICP-MS (QCLot: 1950374)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.02 mg/L	103	84	116
EG035F: Dissolved Mercury by FIMS (QCLot: 1950373)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.1	81	114
EG050F: Dissolved Hexavalent Chromium (QCLot: 1947014)								
EG050F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.5 mg/L	94.8	90	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1946683)								
EK026SF: Total Cyanide	57-12-5	0.004	mg/L	<0.004	0.2 mg/L	90.5	75	109
EK040P: Fluoride by PC Titrator (QCLot: 1948039)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	100	87	117
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1944256)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	64.6	54	132
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1947806)								
EP074: Styrene	100-42-5	5	µg/L	<5	20 µg/L	112	79	114
EP074E: Halogenated Aliphatic Compounds (QCLot: 1947806)								



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP074E: Halogenated Aliphatic Compounds (QCLot: 1947806) - continued								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	200 µg/L	95.7	64	139
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	20 µg/L	88.6	65	124
EP074: Methylene chloride	75-09-2	5	µg/L	<5	20 µg/L	106	81	144
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	20 µg/L	93.4	73	121
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	20 µg/L	99.2	78	120
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	20 µg/L	93.4	68	116
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	20 µg/L	89.1	66	119
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	20 µg/L	94.5	79	118
EP074: Trichloroethene	79-01-6	5	µg/L	<5	20 µg/L	95.4	70	120
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	20 µg/L	97.6	87	114
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	20 µg/L	95.2	75	119
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	20 µg/L	99.6	75	112
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	20 µg/L	100	81	125
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	20 µg/L	111	63	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1947806)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	20 µg/L	105	82	114
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	20 µg/L	105	76	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	20 µg/L	99.8	82	112
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	20 µg/L	102	62	119
EP074G: Trihalomethanes (QCLot: 1947806)								
EP074: Chloroform	67-66-3	5	µg/L	<5	20 µg/L	101	79	119
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1944257)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	74.4	48	110
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	67.8	49	124
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	66.8	53	117
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	66.4	54	118
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	68.5	57	119
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	69.8	51	113
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	67.4	59	123
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	63.8	58	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	63.5	52	126
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	69.5	55	123
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	66.3	52	131
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	76.9	57	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	69.5	56	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	70.7	53	123
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	70.2	53	125

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1944257) - continued								
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	72.6	53	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1944263)								
EP075-EM: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	67.6	44	114
EP075-EM: 2,4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	85.7	53	121
EP075-EM: 2,6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	68.8	55	119
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	4	µg/L	<4	10 µg/L	84.0	57	116
EP075-EM: 2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	10 µg/L	72.2	51	121
EP075-EM: 2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	82.9	56	120
EP075-EM: 2,3,5,6-Tetrachlorophenol	935-95-5	2	µg/L	<2	10 µg/L	71.1	41	125
EP075-EM: 2,3,4,5 & 2,3,4,6-Tetrachlorophenol	4901-51-3/5 8-90-2	2	µg/L	<2	20 µg/L	68.4	47	125
EP075-EM: Pentachlorophenol	87-86-5	2	µg/L	<2	20 µg/L	90.5	22	122
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1944263)								
EP075-EM: Phenol	108-95-2	4	µg/L	<4	10 µg/L	38.9	20	57
EP075-EM: 2-Methylphenol	95-48-7	4	µg/L	<4	10 µg/L	57.9	49	107
EP075-EM: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	20 µg/L	59.8	48	101
EP075-EM: 2-Nitrophenol	88-75-5	4	µg/L	<4	10 µg/L	91.8	53	123
EP075-EM: 2,4-Dimethylphenol	105-67-9	4	µg/L	<4	10 µg/L	67.2	52	128
EP075-EM: 2,4-Dinitrophenol	51-28-5	100	µg/L	<100	120 µg/L	94.6	21	130
EP075-EM: 4-Nitrophenol	100-02-7	50	µg/L	<50	60 µg/L	26.3	13	60
EP075-EM: 2-Methyl-4,6-dinitrophenol	8071-51-0	50	µg/L	<50	60 µg/L	77.6	56	126
EP075-EM: Dinoseb	88-85-7	50	µg/L	<50	60 µg/L	74.4	55	128
EP075-EM: 2-Cyclohexyl-4,6-Dinitrophenol	131-89-5	50	µg/L	<50	50 µg/L	93.8	32	135
EP075I: Organochlorine Pesticides (QCLot: 1944263)								
EP075-EM: alpha-BHC	319-84-6	0.5	µg/L	<0.5	10 µg/L	75.4	59	126
EP075-EM: Heptachlor	76-44-8	0.5	µg/L	<0.5	10 µg/L	77.9	59	131
EP075-EM: Aldrin	309-00-2	0.5	µg/L	<0.5	10 µg/L	78.0	59	133
EP075-EM: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	10 µg/L	77.9	61	133
EP075-EM: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	10 µg/L	78.1	60	132
EP075-EM: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	10 µg/L	79.6	56	130
EP075-EM: Dieldrin	60-57-1	0.5	µg/L	<0.5	10 µg/L	77.8	59	130
EP075-EM: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	10 µg/L	78.0	62	136
EP075-EM: 4,4'-DDT	50-29-3	0.5	µg/L	<0.5	10 µg/L	77.8	57	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1944258)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4331 µg/L	102	58	134
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16952 µg/L	102	60	133
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8695 µg/L	101	54	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1947807)								

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report

Spike

SpikeRecovery(%)

Recovery Limits (%)

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1947250)							
EM1815165-003	NEL-ENV-BH003_1.0m	EG005T: Arsenic	7440-38-2	50 mg/kg	89.7	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	88.4	84	116
		EG005T: Copper	7440-50-8	50 mg/kg	89.4	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	89.6	76	124
		EG005T: Molybdenum	7439-98-7	50 mg/kg	97.7	79	117
		EG005T: Nickel	7440-02-0	50 mg/kg	96.6	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	81.1	71	125
		EG005T: Zinc	7440-66-6	50 mg/kg	89.1	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1947249)							
EM1815165-003	NEL-ENV-BH003_1.0m	EG035T: Mercury	7439-97-6	5 mg/kg	87.4	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1948088)							
EM1814620-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	77.8	58	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1948753)							

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1948753) - continued							
EM1814839-007	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	93.4	77	113
EK040T: Fluoride Total (QCLot: 1944439)							
EM1815165-003	NEL-ENV-BH003_1.0m	EK040T: Fluoride	16984-48-8	400 mg/kg	92.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1945259)							
EM1815165-001	NEL-ENV-BH003_0.2m	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	106	36	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1944320)							
EM1815165-003	NEL-ENV-BH003_1.0m	EP074-UT: Benzene	71-43-2	2 mg/kg	66.8	50	138
		EP074-UT: Toluene	108-88-3	2 mg/kg	65.0	56	134
EP074I: Volatile Halogenated Compounds (QCLot: 1944320)							
EM1815165-003	NEL-ENV-BH003_1.0m	EP074-UT: 1,1-Dichloroethene	75-35-4	2 mg/kg	58.6	26	141
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	61.9	50	134
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	71.8	28	134
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1945257)							
EM1814839-007	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	1 mg/kg	77.1	34	118
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	1 mg/kg	83.0	41	139
		EP075-EM: Pentachlorophenol	87-86-5	1 mg/kg	49.0	10	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1945257)							
EM1814839-007	Anonymous	EP075-EM: Phenol	108-95-2	1 mg/kg	88.7	32	134
		EP075-EM: 2-Nitrophenol	88-75-5	1 mg/kg	82.0	13	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1945257)							
EM1814839-007	Anonymous	EP075-EM: Acenaphthene	83-32-9	1 mg/kg	82.1	46	138
		EP075-EM: Pyrene	129-00-0	1 mg/kg	91.3	27	169
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1944320)							
EM1815165-003	NEL-ENV-BH003_1.0m	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	59.5	43	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1945258)							
EM1814839-017	Anonymous	EP071-EM: C10 - C14 Fraction	----	806 mg/kg	103	53	123
		EP071-EM: C15 - C28 Fraction	----	3006 mg/kg	108	70	124
		EP071-EM: C29 - C36 Fraction	----	1584 mg/kg	104	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1944320)							
EM1815165-003	NEL-ENV-BH003_1.0m	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	56.6	42	106
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1945258)							
EM1814839-017	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1160 mg/kg	104	65	123
		EP071-EM: >C16 - C34 Fraction	----	3978 mg/kg	108	67	121
		EP071-EM: >C34 - C40 Fraction	----	313 mg/kg	101	44	126
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1948444)							



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1948444) - continued							
EM1815165-001	NEL-ENV-BH003_0.2m	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	120	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	96.4	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	107	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	121	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	120	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	128	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1948444)							
EM1815165-001	NEL-ENV-BH003_0.2m	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	96.3	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	118	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	116	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	116	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	124	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	115	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	117	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	100	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	119	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	94.0	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	111	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1948444)							
EM1815165-001	NEL-ENV-BH003_0.2m	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	121	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	103	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	98.9	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	92.0	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	101	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	125	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	108	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1948444)							
EM1815165-001	NEL-ENV-BH003_0.2m	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	120	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	122	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	114	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	124	50	130

Sub-Matrix: **WATER**

Matrix Spike (MS) Report		
Spike	SpikeRecovery(%)	Recovery Limits (%)



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1950372)							
EM1815106-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	100.0	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	92.0	81	133
		EG020A-F: Copper	7440-50-8	0.2 mg/L	92.6	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	88.8	75	133
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	93.8	73	131
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	93.4	75	131
EG035F: Dissolved Mercury by FIMS (QCLot: 1950373)							
EM1815106-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	# 66.6	70	120
EG050F: Dissolved Hexavalent Chromium (QCLot: 1947014)							
EM1815165-009	RB143	EG050F: Hexavalent Chromium	18540-29-9	0.5 mg/L	102	59	127
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1946683)							
EM1815165-010	FB143	EK026SF: Total Cyanide	57-12-5	0.2 mg/L	98.0	70	130
EK040P: Fluoride by PC Titrator (QCLot: 1948039)							
EM1815195-001	Anonymous	EK040P: Fluoride	16984-48-8	100 mg/L	104	70	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 1947806)							
EM1815238-003	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	84.3	40	124
		EP074: Trichloroethene	79-01-6	20 µg/L	71.0	54	126
EP074F: Halogenated Aromatic Compounds (QCLot: 1947806)							
EM1815238-003	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	91.4	68	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1944258)							
EM1815222-005	Anonymous	EP071: C10 - C14 Fraction	----	4331 µg/L	97.6	50	130
		EP071: C15 - C28 Fraction	----	16952 µg/L	97.0	54	136
		EP071: C29 - C36 Fraction	----	8695 µg/L	98.3	50	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1947807)							
EM1815238-003	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	87.8	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1944258)							
EM1815222-005	Anonymous	EP071: >C10 - C16 Fraction	----	6292 µg/L	95.5	50	128
		EP071: >C16 - C34 Fraction	----	22143 µg/L	98.3	50	150
		EP071: >C34 - C40 Fraction	----	1677 µg/L	100	51	159
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1947807)							
EM1815238-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	87.3	44	122
EP080: BTEXN (QCLot: 1947807)							
EM1815238-003	Anonymous	EP080: Benzene	71-43-2	20 µg/L	86.4	68	130
		EP080: Toluene	108-88-3	20 µg/L	98.5	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1815165	Page	: 1 of 14
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 20-Sep-2018
Site	: ----	Issue Date	: 01-Oct-2018
Sampler	: ----	No. of samples received	: 11
Order number	:	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- Matrix Spike outliers exist - please see following pages for full details.
- Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	EM1815106--002	Anonymous	Mercury	7439-97-6	66.6 %	70-120%	Recovery less than lower data quality objective

Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075S: Acid Extractable Surrogates (Waste Classification)	EM1815165-009	RB143	2,4,6-Tribromophenol	118-79-6	50.4 %	52-140 %	Recovery less than lower data quality objective
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)	EM1815165-009	RB143	Anthracene-d10	1719-06-8	63.9 %	67-137 %	Recovery less than lower data quality objective
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)	EM1815165-009	RB143	4-Terphenyl-d14	1718-51-0	63.0 %	66-136 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural RB143,	FB143	----	----	----	25-Sep-2018	18-Sep-2018
						7

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	1	19	5.26	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	24-Sep-2018	25-Sep-2018	✓	24-Sep-2018	24-Sep-2018	✓
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE Soil Jar (EA055) NEL-ENV-BH003_0.5m,	NEL-ENV-BH005_0.2m	18-Sep-2018	----	----	----	24-Sep-2018	02-Oct-2018	✓
Soil Glass Jar - Unpreserved (EA055) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	----	----	----	24-Sep-2018	02-Oct-2018	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	25-Sep-2018	17-Mar-2019	✓	25-Sep-2018	17-Mar-2019	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	25-Sep-2018	16-Oct-2018	✓	25-Sep-2018	16-Oct-2018	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	25-Sep-2018	16-Oct-2018	✓	25-Sep-2018	02-Oct-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	25-Sep-2018	02-Oct-2018	✓	26-Sep-2018	09-Oct-2018	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	21-Sep-2018	16-Oct-2018	✓	25-Sep-2018	16-Oct-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	21-Sep-2018	02-Oct-2018	✔	24-Sep-2018	31-Oct-2018	✔
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	21-Sep-2018	25-Sep-2018	✔	21-Sep-2018	25-Sep-2018	✔
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	21-Sep-2018	25-Sep-2018	✔	21-Sep-2018	25-Sep-2018	✔
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	21-Sep-2018	25-Sep-2018	✔	21-Sep-2018	25-Sep-2018	✔
EP075A: Phenolic Compounds (Halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	21-Sep-2018	02-Oct-2018	✔	24-Sep-2018	31-Oct-2018	✔
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	21-Sep-2018	02-Oct-2018	✔	24-Sep-2018	31-Oct-2018	✔
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	21-Sep-2018	02-Oct-2018	✔	24-Sep-2018	31-Oct-2018	✔
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	21-Sep-2018	02-Oct-2018	✔	24-Sep-2018	31-Oct-2018	✔
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	21-Sep-2018	25-Sep-2018	✔	21-Sep-2018	25-Sep-2018	✔
Soil Glass Jar - Unpreserved (EP071-EM) NEL-ENV-BH003_0.2m, NEL-ENV-BH005_0.5m,	NEL-ENV-BH003_1.0m, NEL-ENV-BH005_1.0m	18-Sep-2018	21-Sep-2018	02-Oct-2018	✔	24-Sep-2018	31-Oct-2018	✔



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)								
NEL-ENV-BH003_0.2m,	NEL-ENV-BH003_1.0m,	18-Sep-2018	21-Sep-2018	25-Sep-2018	✔	21-Sep-2018	25-Sep-2018	✔
NEL-ENV-BH005_0.5m,	NEL-ENV-BH005_1.0m							
Soil Glass Jar - Unpreserved (EP071-EM)								
NEL-ENV-BH003_0.2m,	NEL-ENV-BH003_1.0m,	18-Sep-2018	21-Sep-2018	02-Oct-2018	✔	24-Sep-2018	31-Oct-2018	✔
NEL-ENV-BH005_0.5m,	NEL-ENV-BH005_1.0m							
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
NEL-ENV-BH003_0.2m,	NEL-ENV-BH003_0.5m,	18-Sep-2018	25-Sep-2018	17-Mar-2019	✔	26-Sep-2018	04-Nov-2018	✔
NEL-ENV-BH003_1.0m,	NEL-ENV-BH005_0.2m,							
NEL-ENV-BH005_0.5m,	NEL-ENV-BH005_1.0m							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
NEL-ENV-BH003_0.2m,	NEL-ENV-BH003_0.5m,	18-Sep-2018	25-Sep-2018	17-Mar-2019	✔	26-Sep-2018	04-Nov-2018	✔
NEL-ENV-BH003_1.0m,	NEL-ENV-BH005_0.2m,							
NEL-ENV-BH005_0.5m,	NEL-ENV-BH005_1.0m							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
NEL-ENV-BH003_0.2m,	NEL-ENV-BH003_0.5m,	18-Sep-2018	25-Sep-2018	17-Mar-2019	✔	26-Sep-2018	04-Nov-2018	✔
NEL-ENV-BH003_1.0m,	NEL-ENV-BH005_0.2m,							
NEL-ENV-BH005_0.5m,	NEL-ENV-BH005_1.0m							
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
NEL-ENV-BH003_0.2m,	NEL-ENV-BH003_0.5m,	18-Sep-2018	25-Sep-2018	17-Mar-2019	✔	26-Sep-2018	04-Nov-2018	✔
NEL-ENV-BH003_1.0m,	NEL-ENV-BH005_0.2m,							
NEL-ENV-BH005_0.5m,	NEL-ENV-BH005_1.0m							
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
NEL-ENV-BH003_0.2m,	NEL-ENV-BH003_0.5m,	18-Sep-2018	25-Sep-2018	17-Mar-2019	✔	26-Sep-2018	04-Nov-2018	✔
NEL-ENV-BH003_1.0m,	NEL-ENV-BH005_0.2m,							
NEL-ENV-BH005_0.5m,	NEL-ENV-BH005_1.0m							

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) RB143,FB143	18-Sep-2018	----	----	----	25-Sep-2018	18-Sep-2018	✖
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020B-F) RB143,FB143	18-Sep-2018	----	----	----	26-Sep-2018	17-Mar-2019	✔



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035F) RB143,	FB143	18-Sep-2018	----	----	----	26-Sep-2018	02-Oct-2018	✓
EG050F: Dissolved Hexavalent Chromium								
Clear Plastic Bottle - NaOH (EG050F) RB143,	FB143	18-Sep-2018	----	----	----	24-Sep-2018	16-Oct-2018	✓
EK026SF: Total CN by Segmented Flow Analyser								
White Plastic Bottle-NaOH (EK026SF) RB143,	FB143	18-Sep-2018	----	----	----	24-Sep-2018	02-Oct-2018	✓
EK040P: Fluoride by PC Titrator								
Clear Plastic Bottle - Natural (EK040P) RB143,	FB143	18-Sep-2018	----	----	----	25-Sep-2018	16-Oct-2018	✓
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved (EP066) RB143,	FB143	18-Sep-2018	24-Sep-2018	25-Sep-2018	✓	26-Sep-2018	03-Nov-2018	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP074) RB143,	FB143	18-Sep-2018	25-Sep-2018	02-Oct-2018	✓	26-Sep-2018	02-Oct-2018	✓
EP074E: Halogenated Aliphatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB143,	FB143	18-Sep-2018	25-Sep-2018	02-Oct-2018	✓	26-Sep-2018	02-Oct-2018	✓
EP074F: Halogenated Aromatic Compounds								
Amber VOC Vial - Sulfuric Acid (EP074) RB143,	FB143	18-Sep-2018	25-Sep-2018	02-Oct-2018	✓	26-Sep-2018	02-Oct-2018	✓
EP074G: Trihalomethanes								
Amber VOC Vial - Sulfuric Acid (EP074) RB143,	FB143	18-Sep-2018	25-Sep-2018	02-Oct-2018	✓	26-Sep-2018	02-Oct-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB143,	FB143	18-Sep-2018	24-Sep-2018	25-Sep-2018	✓	26-Sep-2018	03-Nov-2018	✓
EP075A: Phenolic Compounds (Halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB143,	FB143	18-Sep-2018	24-Sep-2018	25-Sep-2018	✓	26-Sep-2018	03-Nov-2018	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Amber Glass Bottle - Unpreserved (EP075-EM) RB143,	FB143	18-Sep-2018	24-Sep-2018	25-Sep-2018	✓	26-Sep-2018	03-Nov-2018	✓
EP075I: Organochlorine Pesticides								
Amber Glass Bottle - Unpreserved (EP075-EM) RB143,	FB143	18-Sep-2018	24-Sep-2018	25-Sep-2018	✓	26-Sep-2018	03-Nov-2018	✓

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 Client : GHD PTY LTD
 Project : 31350060910



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
RB143,	FB143	18-Sep-2018	24-Sep-2018	25-Sep-2018	✓	26-Sep-2018	03-Nov-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RB143,	FB143,	18-Sep-2018	25-Sep-2018	02-Oct-2018	✓	26-Sep-2018	02-Oct-2018	✓
TB143								
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
RB143,	FB143	18-Sep-2018	24-Sep-2018	25-Sep-2018	✓	26-Sep-2018	03-Nov-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
RB143,	FB143,	18-Sep-2018	25-Sep-2018	02-Oct-2018	✓	26-Sep-2018	02-Oct-2018	✓
TB143								
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
RB143,	FB143,	18-Sep-2018	25-Sep-2018	02-Oct-2018	✓	26-Sep-2018	02-Oct-2018	✓
TB143								



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
PCB - VIC EPA 448.3 Screen	EP066-EM	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium - Dissolved	EG050F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)



Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium - Dissolved	EG050F	WATER	In house: Referenced to APHA 3500 Cr-B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined on filtered water sample as received by pH adjustment and colour development using dephenylcarbazine. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C / ASTM D7511. Sodium hydroxide preserved samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	WATER	In house: Referenced to USEPA SW 846 - 8270B Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 502)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.



Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Separatory Funnel Extraction of Liquids	ORG14-EM	WATER	In house: Referenced to USEPA SW 846 - 3510B. 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using dichloromethane. The resultant extracts are combined, dehydrated, concentrated and exchanged into toluene for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1815637**
Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060910**
Order number : **----**
C-O-C number : **----**
Sampler : **TW**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **3**
No. of samples analysed : **2**

Page : 1 of 6
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 27-Sep-2018 16:45
Date Analysis Commenced : 04-Oct-2018
Issue Date : 08-Oct-2018 11:47



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini		Sydney Organics, Smithfield, NSW
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID		NEL-ENV-BH003_7.5m	----	----	----	----
Client sampling date / time			27-Sep-2018 00:00		----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1815637-001	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%	23.0	----	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	NEL-ENV-BH003_7.5m	----	----	----	----
Client sampling date / time				27-Sep-2018 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EM1815637-001	-----	-----	-----	-----	-----
Result				----	----	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%	89.0	----	----	----	----	----
13C8-PFOA	----	0.0002	%	98.5	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB311	----	----	----	----
Client sampling date / time					27-Sep-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM1815637-003	-----	-----	-----	-----
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		89.0	----	----	----	----
Toluene-D8	2037-26-5	2	%		75.7	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		100.0	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

GHD



GHD Melbourne
180 Lonsdale Street, Melbourne 3000
Telephone: 613 8687 8000 Facsimile: 613 8687 8111

[illegible]

Environmental Division
Melbourne
Work Order Reference
EM1815637



Telephone : + 61-3-8549 9600

Sampled by:	Tom Whidden	Date/Time:	Am 27/04/18	Relinquished by:	Tom Whidden	Date/Time:	Pm 27/08/18
Received by:		Date/Time:		Relinquished by:		Date/Time:	
Received by Courier:		Date/Time:		Relinquished by:		Date/Time:	
Received by Lab:	Pm (Aug)	Date/Time:	27/9/18 @ 4.45				
Remarks:	Please CC reports and correspondence to Mark Clough (mark.clough@ghd.com) and Robyn Madsen (robyn.madsen@ghd.com)						

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Monday, 1 October 2018 10:47 AM
To: Shirley LeCornu
Cc: David Quinn
Subject: RE: EM1815637 - GHD - 31350060910
Attachments: 01102018094415-0001.pdf

Hi Shirley,

Could you please analyse the following on Standard TAT:

EM1815637:

001 NEL-ENV-BH003_7.5m = PFAS
003 TB311 = W-18 (BTEX suite for trip blanks)

Regards,

Kory Auch

GHD

T: 03 8687 8948 | **V:** 318948 | **M:** 0478 797 000 | **E:** kory.auch@ghd.com

From: Shirley LeCornu <shirley.lecornu@alsglobal.com>
Sent: Monday, 1 October 2018 10:13 AM
To: David Quinn <David.Quinn@ghd.com>; Kory Auch <Kory.Auch@ghd.com>
Subject: FW: EM1815637 - GHD - 31350060910

Hi David & Kory

Please let me know if the attached requires analysis.

Thanks

Shirley

Shirley LeCornu

Client Services Coordinator – Springvale
Environmental



T +61 3 8549 9600 **D** +61 3 8549 9630
F +61 3 8549 9626

Shirley.lecornu@alsglobal.com
2-4 Westall Rd
Springvale Vic 3171
Australia

QUALITY CONTROL REPORT

Work Order	: EM1815637	Page	: 1 of 7
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: MR DAVID QUINN	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060910	Date Samples Received	: 27-Sep-2018
Order number	: ----	Date Analysis Commenced	: 04-Oct-2018
C-O-C number	: ----	Issue Date	: 08-Oct-2018
Sampler	: TW		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 3		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini		Sydney Organics, Smithfield, NSW
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1964374)									
EB1823444-024	Anonymous	EA055: Moisture Content	----	0.1	%	7.7	7.3	5.19	0% - 20%
ES1828984-004	Anonymous	EA055: Moisture Content	----	0.1	%	15.9	16.8	5.52	0% - 50%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 1963194)									
EB1823571-032	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EM1815701-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1963194)									
EB1823571-032	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 1963194) - continued									
EB1823571-032	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EM1815701-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 1963194)									
EB1823571-032	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EM1815701-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 1963194)									
EB1823571-032	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
EM1815701-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.00	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1963018)									
EM1815598-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1815598-013	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	1420	1250	12.8	0% - 20%
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1963018)									
EM1815598-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1815598-013	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	1320	1170	12.3	0% - 20%
EP080: BTEXN (QC Lot: 1963018)									
EM1815598-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
EM1815598-013	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	54	49	9.79	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	156	144	7.55	0% - 20%
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1963194)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	59.2	57	121
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	64.0	55	125
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	62.4	52	126
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	64.0	54	123
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	61.6	55	127
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	59.6	54	125
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1963194)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	57.4	52	128
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.0	54	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.8	58	127
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.0	57	128
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	60	134
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.8	63	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.0	55	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	64.4	62	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	65.2	53	134
EP231X: Perfluorotridecanoic acid (PFTriDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	58.0	49	129
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	69.6	59	129
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1963194)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.4	52	132
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	67.5	65	126
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	64.4	64	126
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	69.4	63	124
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	64.6	58	125
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	66.4	61	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	73.2	55	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1963194)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	80.4	54	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	70.4	61	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.8	62	130



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1963194) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	72.4	60	130

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1963018)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	88.9	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1963018)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	86.1	66	123
EP080: BTEXN (QCLot: 1963018)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	95.2	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.8	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	96.5	73	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	103	72	131
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	106	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	108	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 1963194)							
EB1823571-032	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	71.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	79.2	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	79.2	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	76.0	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	72.0	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	64.8	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1963194)							
EB1823571-032	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	66.5	30	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	101	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	87.6	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	101	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	88.8	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	87.6	50	130



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 1963194) - continued							
EB1823571-032	Anonymous	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	74.4	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	77.2	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	81.6	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	70.0	30	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	86.8	30	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 1963194)							
EB1823571-032	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	74.0	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	81.6	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	85.1	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	68.4	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	79.5	30	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	78.0	30	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	74.8	30	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 1963194)							
EB1823571-032	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	92.8	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	87.6	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	87.2	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	86.0	50	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1963018)							
EM1815598-002	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	71.9	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1963018)							
EM1815598-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	69.6	44	122
EP080: BTEXN (QCLot: 1963018)							
EM1815598-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	87.4	68	130
		EP080: Toluene	108-88-3	20 µg/L	90.2	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1815637**

Page : 1 of 4

Client : **GHD PTY LTD**
Contact : **MR DAVID QUINN**
Project : **31350060910**
Site : **----**
Sampler : **TW**
Order number :

Laboratory : **Environmental Division Melbourne**
Telephone : **+61-3-8549 9630**
Date Samples Received : **27-Sep-2018**
Issue Date : **08-Oct-2018**
No. of samples received : **3**
No. of samples analysed : **2**

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) NEL-ENV-BH003_7.5m	27-Sep-2018	----	----	----	04-Oct-2018	11-Oct-2018	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
Soil Glass Jar - Unpreserved (EP231X) NEL-ENV-BH003_7.5m	27-Sep-2018	05-Oct-2018	26-Mar-2019	✓	05-Oct-2018	14-Nov-2018	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
Soil Glass Jar - Unpreserved (EP231X) NEL-ENV-BH003_7.5m	27-Sep-2018	05-Oct-2018	26-Mar-2019	✓	05-Oct-2018	14-Nov-2018	✓
EP231C: Perfluoroalkyl Sulfonamides							
Soil Glass Jar - Unpreserved (EP231X) NEL-ENV-BH003_7.5m	27-Sep-2018	05-Oct-2018	26-Mar-2019	✓	05-Oct-2018	14-Nov-2018	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
Soil Glass Jar - Unpreserved (EP231X) NEL-ENV-BH003_7.5m	27-Sep-2018	05-Oct-2018	26-Mar-2019	✓	05-Oct-2018	14-Nov-2018	✓
EP231P: PFAS Sums							
Soil Glass Jar - Unpreserved (EP231X) NEL-ENV-BH003_7.5m	27-Sep-2018	05-Oct-2018	26-Mar-2019	✓	05-Oct-2018	14-Nov-2018	✓

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) TB311	27-Sep-2018	04-Oct-2018	11-Oct-2018	✓	05-Oct-2018	11-Oct-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber VOC Vial - Sulfuric Acid (EP080) TB311	27-Sep-2018	04-Oct-2018	11-Oct-2018	✓	05-Oct-2018	11-Oct-2018	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) TB311	27-Sep-2018	04-Oct-2018	11-Oct-2018	✓	05-Oct-2018	11-Oct-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-House. A portion of soil is extracted with MTBE. The extract is taken to dryness, made up in mobile phase. Analysis is by LC/MSMS, ESI Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Sample Extraction for PFAS	EP231-PR	SOIL	In house
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS

Work Order : **EM1815940**
Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Address : **LEVEL 8, 180 LONSDALE ST**
MELBOURNE VIC, AUSTRALIA 3001
Telephone : **----**
Project : **31350060202**
Order number : **----**
C-O-C number : **----**
Sampler : **----**
Site : **----**
Quote number : **ME/124/18 - North East Link**
No. of samples received : **5**
No. of samples analysed : **5**

Page : 1 of 5
Laboratory : Environmental Division Melbourne
Contact : Shirley LeCornu
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +61-3-8549 9630
Date Samples Received : 07-Sep-2018 16:45
Date Analysis Commenced : 04-Oct-2018
Issue Date : 11-Oct-2018 14:53



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- This is a rebatch of EM1814388 & EM1814744.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: ASLP LEACHATE
 (Matrix: WATER)

Client sample ID

				NEL-BH118_0.5	NEL-BH221_0.5	NEL-BH221_1.0	NEL-BH119_1.0	NEL-BH119_1.8
Client sampling date / time				12-Sep-2018 00:00	11-Sep-2018 00:00	11-Sep-2018 00:00	07-Sep-2018 00:00	07-Sep-2018 00:00
Compound	CAS Number	LOR	Unit	EM1815940-001	EM1815940-002	EM1815940-003	EM1815940-004	EM1815940-005
				Result	Result	Result	Result	Result
EG005C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	<0.1	----	----	----	<0.1
Cadmium	7440-43-9	0.05	mg/L	----	----	----	0.15	0.12
Lead	7439-92-1	0.1	mg/L	0.2	<0.1	0.2	<0.1	0.2
Nickel	7440-02-0	0.1	mg/L	----	----	----	0.4	1.7
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	23.2	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	50.9	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%	68.0	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	55.8	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%	61.7	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	58.0	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				NEL-BH118_0.5	NEL-BH221_0.5	NEL-BH221_1.0	NEL-BH119_1.0	NEL-BH119_1.8
Client sampling date / time				12-Sep-2018 00:00	11-Sep-2018 00:00	11-Sep-2018 00:00	07-Sep-2018 00:00	07-Sep-2018 00:00
Compound	CAS Number	LOR	Unit	EM1815940-001	EM1815940-002	EM1815940-003	EM1815940-004	EM1815940-005
				Result	Result	Result	Result	Result
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	8.0	6.8	8.1	8.1	7.4
After HCl pH	----	0.1	pH Unit	1.3	1.1	1.1	1.1	1.1
Extraction Fluid pH	----	0.1	pH Unit	5.0	5.0	5.0	5.0	5.0
Final pH	----	0.1	pH Unit	5.0	5.0	5.0	5.1	5.0



Surrogate Control Limits

Sub-Matrix: ASLP LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	46
2-Chlorophenol-D4	93951-73-6	23	104
2,4,6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	36	114
Anthracene-d10	1719-06-8	51	119
4-Terphenyl-d14	1718-51-0	49	127

re-batch
AAP Leach

tray MS 3767

tray MS 3640

Shirley LeCornu

From: Kory.Auch@ghd.com
Sent: Wednesday, 3 October 2018 5:03 PM
To: Shirley LeCornu
Cc: David Quinn
Subject: Leachability Analysis request - EM1814388 and EM1814744 - North East Link Project

Hi Shirley, hope you are doing well,

*New
batch
10*
Could we please have IWRG621 leachate testing conducted for the following samples on standard TAT?

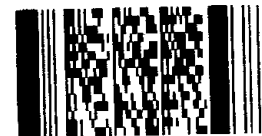
EM1814744:

- 1 NEL-BH118_0.5 = arsenic, lead, and benzo(a)pyrene #15
- 2 NEL-BH221_0.5 = lead #1
- 3 NEL-BH221_1.0 = lead #2

EM1814388:

- 4 NEL-BH119_1.0 = cadmium, lead, nickel #1
- 5 NEL-BH119_1.8 = arsenic, cadmium, lead, nickel #3

Environmental Division
Melbourne
Work Order Reference
EM1815940



Telephone : + 61-3-8549 9600

Thanks,

MS: 4031-2
TL 4-10

Kory Auch
Contamination Assessment & Remediation

GHD

Proudly employee owned

T: +61 3 8687 8948 | M: +61 478 797 000 | E: kory.auch@ghd.com
Level 18, 180 Lonsdale Street Melbourne Victoria 3000 Australia | www.ghd.com

WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

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**SAMPLE RECEIPT NOTIFICATION (SRN)****Work Order : EM1815940**

Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: kory.auch@ghd.com	E-mail	: shirley.lecornu@Alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9630
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 31350060202	Page	: 1 of 3
Order number	:	Quote number	: EM2018GHDSE0003 (ME/124/18 - North East Link)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 07-Sep-2018 16:45	Issue Date	: 04-Oct-2018
Client Requested Due Date	: 11-Oct-2018	Scheduled Reporting Date	: 11-Oct-2018

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 5 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- This is a rebatch of EM1814388 & EM1814744.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN60a ASLP Leachate Procedure	SOIL - EP075 SIM PAH only SIM - PAH only
EM1815940-001	12-Sep-2018 00:00	NEL-BH118_0.5	✓	✓	✓
EM1815940-002	11-Sep-2018 00:00	NEL-BH221_0.5	✓	✓	
EM1815940-003	11-Sep-2018 00:00	NEL-BH221_1.0	✓	✓	
EM1815940-004	07-Sep-2018 00:00	NEL-BH119_1.0	✓	✓	
EM1815940-005	07-Sep-2018 00:00	NEL-BH119_1.8	✓	✓	

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: SOIL

Evaluation: ✖ = Holding time breach ; ✓ = Within holding time.

Method	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EN60a: ASLP for Non & Semivolatile Analytes							
NEL-BH118_0.5	Non-Volatile Leach: 14 day HT(€	26-Sep-2018	----	07-Sep-2018	✓	03-Oct-2018	✗

QUALITY CONTROL REPORT

Work Order	: EM1815940	Page	: 1 of 3
Client	: GHD PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: KORY AUCH	Contact	: Shirley LeCornu
Address	: LEVEL 8, 180 LONSDALE ST MELBOURNE VIC, AUSTRALIA 3001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9630
Project	: 31350060202	Date Samples Received	: 07-Sep-2018
Order number	: ----	Date Analysis Commenced	: 04-Oct-2018
C-O-C number	: ----	Issue Date	: 11-Oct-2018
Sampler	: ----		
Site	: ----		
Quote number	: ME/124/18 - North East Link		
No. of samples received	: 5		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005C: Leachable Metals by ICPAES (QC Lot: 1966386)									
EM1815694-001	Anonymous	EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EM1815940-001	NEL-BH118_0.5	EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	0.2	0.2	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EG005C: Leachable Metals by ICPAES (QC Lot: 1973677)									
EM1815940-002	NEL-BH221_0.5	EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	<0.05	0.00	No Limit
		EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005C: Leachable Metals by ICPAES (QCLot: 1966386)								
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	98.7	89	119
EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	1 mg/L	94.9	88	116
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	97.7	88	113
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	93.5	86	111
EG005C: Leachable Metals by ICPAES (QCLot: 1973677)								
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	1 mg/L	99.2	89	119
EG005C: Cadmium	7440-43-9	0.05	mg/L	<0.05	1 mg/L	96.7	88	116
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1 mg/L	98.3	88	113
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1 mg/L	95.4	86	111
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1966301)								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	61.4	56	126

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1966386)							
EM1815694-002	Anonymous	EG005C: Arsenic	7440-38-2	1 mg/L	104	88	124
		EG005C: Cadmium	7440-43-9	1 mg/L	91.4	89	115
		EG005C: Lead	7439-92-1	1 mg/L	92.8	86	118
		EG005C: Nickel	7440-02-0	1 mg/L	89.4	88	116
EG005C: Leachable Metals by ICPAES (QCLot: 1973677)							
EM1815940-003	NEL-BH221_1.0	EG005C: Arsenic	7440-38-2	1 mg/L	104	88	124
		EG005C: Cadmium	7440-43-9	1 mg/L	92.9	89	115
		EG005C: Lead	7439-92-1	1 mg/L	94.5	86	118
		EG005C: Nickel	7440-02-0	1 mg/L	91.5	88	116

QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1815940**

Page : 1 of 5

Client : **GHD PTY LTD**
Contact : **KORY AUCH**
Project : **31350060202**
Site : **----**
Sampler : **----**
Order number :

Laboratory : Environmental Division Melbourne
Telephone : +61-3-8549 9630
Date Samples Received : 07-Sep-2018
Issue Date : 11-Oct-2018
No. of samples received : 5
No. of samples analysed : 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
Container / Client Sample ID(s)						
EN60: ASLP Leaching Procedure						
Non-Volatile Leach: 14 day HT(e.g. SV organics) NEL-BH118_0.5	04-Oct-2018	26-Sep-2018	8	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Container / Client Sample ID(s)							
EN60: ASLP Leaching Procedure							
Non-Volatile Leach: 14 day HT(e.g. SV organics) (EN60a) NEL-BH118_0.5	12-Sep-2018	04-Oct-2018	26-Sep-2018	✖	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH119_1.0, NEL-BH119_1.8	07-Sep-2018	09-Oct-2018	06-Mar-2019	✔	----	----	----
Non-Volatile Leach: 180 day HT (e.g. metals ex.Hg) (EN60a) NEL-BH221_0.5, NEL-BH221_1.0	11-Sep-2018	09-Oct-2018	10-Mar-2019	✔	----	----	----

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Container / Client Sample ID(s)							

Page : 3 of 5
 Work Order : EM1815940
 Client : GHD PTY LTD
 Project : 31350060202



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH118_0.5	04-Oct-2018	05-Oct-2018	02-Apr-2019	✔	05-Oct-2018	02-Apr-2019	✔
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C) NEL-BH221_0.5, NEL-BH221_1.0, NEL-BH119_1.0, NEL-BH119_1.8	09-Oct-2018	10-Oct-2018	07-Apr-2019	✔	10-Oct-2018	07-Apr-2019	✔
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) NEL-BH118_0.5	04-Oct-2018	05-Oct-2018	11-Oct-2018	✔	05-Oct-2018	14-Nov-2018	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Leachable Metals by ICPAES	EG005C	3	17	17.65	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	2	17	11.76	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	2	17	11.76	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	2	17	11.76	5.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
Separatory Funnel Extraction of Liquids	ORG14	SOIL	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.